REVALUE

The impact of Energy Efficiency on residential real estate values: analysis of the findings from Round Table discussions with valuers

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Executive Summary

Introduction and Purpose

This deliverable is one of a series of short reports detailing different aspects of qualitative research conducted in 2017 as a part of the REVALUE project. The project has the overall aim of developing deeper understanding of the connections between the energy efficiency of residential rented stock in various EU countries and its market or investment value. There is a particular focus on the social housing sector. By so doing it aims to support moves towards investment in upgrading existing stock for greater efficiency. The project also aims to inform professional bodies with a view to revision their guidance to valuers who advise investors and banks.

This deliverable detail the findings from a series of six Round Tables with practicing valuers held over the Summer of 2017. Three workshops took place in England (London, Birmingham and Manchester) and three in mainland Europe (Amsterdam, Barcelona and Berlin). In total they involved some 25 RICS registered valuers working for a range of valuation consultancies. Each workshop took approximately two hours and involved discussion partly stimulated by consideration of example typical properties. The purpose was to establish the extent to which valuers were examining energy efficiency as part of their due diligence process and reflecting it within their valuations.

The summary findings were as follows:

The instruction from the client is critical; many do not specify consideration of energy matters

Valuers confirmed that they act in accordance with client instructions and in compliance with professional regulatory codes. The latter have recently been revised and give greater guidance and encouragement to valuers to consider sustainability data where it is available. When the instruction is to provide a market value, normally there is no such specific instruction given by clients in relation to reporting on the contribution of the EPC or other energy data within their reports; further the fee basis is often insufficient to support detailed investigations regarding energy data, especially where market evidence would suggest it is not likely to have an impact on market participant behaviours. However, banks are beginning in some cases to ask for comment.

Valuers also prepare investment valuations using discounted cash flow (DCF) techniques when acting for portfolio owners. In these cases the data made available to valuers may include more specific energy data which can be factored in to the cash flow analysis. However, valuers confirmed that often any cost reductions resulting from energy efficiency measures may not enhance the net cash flow if the cost savings are enjoyed by the tenant – not the landlord. In this case the only impact on value is on potentially reduced investment risk. Finally, it was noted that where rental caps are statutorily imposed, any energy efficiency improvements can only be included in the calculations by adjustments to the discount rate and the potential for future gain.

Valuers have found little evidence that EPCs ratings impact on the market value of residential assets

Valuers in all four countries in which discussions took place confirmed that EPCs, even where available, were not a key factor affecting the behaviour of market participants and, in turn, their assessments of market value. Differing levels of trust in the accuracy of EPC were reported but overall they are not deemed to be reliable data in terms of accurately assessing the true energy efficiency of a property. Whilst there was an acknowledgement that over time accuracy had improved, notably since the re-cast of the regulations applicable from 2012, it was reported that even in new builds they could sometimes be inconsistent ratings. The result is that most market participants were simply not factoring in EPC levels into their offer prices. In turn, valuers, who are under a professional obligation to reflect, not lead, the market, do not generally factor the level of certificate rating into their valuations; they tend to report it as a 'tick box' exercise. Traditional value drivers such as location, specification, configuration, size and condition still dominate. However, for England's, the residential investment market, the impending imposition of minimum energy standards requirements was noted as beginning to raise the profile of the issue. But where high demand for housing prevails, valuers consider that economic and traditional factors will continue to prevail.

Some features which enhance energy efficiency are increasingly regarded as 'normal' and a brown discount may apply if they are missing

EPCs may not directly relate to reported market values, but the specification of dwelling expected as a 'norm' in the market place will reflect some features which can increase energy efficiency. Where they are expected, the valuer may apply some level of 'brown' discounting to reflect that a purchaser would normally expect to expend capital on upgrading, albeit that this may be less than the actual anticipated costs. The energy efficiency features that do have a bearing vary by geography, typology and sub-market. For example, double or even triple glazing is an expectation in northern Europe, whereas an efficient cooling system is more important in southern Europe. Valuers reported that features such as wall insulation, which are not easily visible, are less likely to influence values but, in some cases, where installation has been poor dampness can occur, leading to a value decrease. The resultant picture is therefore complex in terms of the relationship between any individual upgrade measure and any possible value impact.

Some Valuers may lack the knowledge to do energy assessment

A formal valuation is not a building survey and in most countries valuers have limited training in the technical aspects of energy assessments, though all were confident and competent in building inspection. It was only in one country in the study (Spain) that valuers tend to have an engineering educational background; elsewhere they were more likely to have had a business or economics based education. Achieving a closer integration of energy assessments within a building inspection to underpin a valuation would require not just greater cost and time, but the input from an energy specialist. This might be appropriate in some cases, but is outside the normal scope of due diligence for a valuation. Even then, not all data are readily available and in the absence of any objective measures that directly links the energy performance of a dwelling to its value, it is unlikely to form part of a client's instruction.

Inference of the Findings

The inference of these collectively is that it is important to understand that valuers do not make markets; they reflect them. Their skills and expertise lies in interpreting data as supplied by clients and gleaned through their inspection and due diligence process. Currently, EPC data is the only 'standard' data relating to energy and even this is not always available or, if it is available, trusted to be accurate. Other data relating to costs and performance of the building are not available to either market participants or valuers.

What can be discerned is that markets are moving – if gradually. The expectation of what is a 'normal' expectation in relation to energy efficient characteristic is changing. Properties that fall short will face discounted values – a 'brown' discount'; however, properties where technologies have been introduced that are not yet proven or have developed reputational issues, may well not reap a value premium; they may even decline in value.

Given the role of the valuer as an observer and reflector, the inference of these findings would seem to suggest that it is unrealistic to suppose that simply changing guidance on inspections carried out by valuers will be a potent force for change. However, valuers report that lenders are beginning to enquire about energy – and if they do and build it into the funding of purchasers this will provide a market stimulus to which valuers will respond, although in some cases the level of inspection and due diligence would require to be increased. Buildings are complex- and the types or interventions that will be required to ensure that upgrade targets are met is will need often individualised solutions, not a reliance on interpretation of EPCs. Valuation and valuers have a role to play in highlighting and interpreting issues – but only a part.

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Chapter 1 Introduction and aims

This report is one of a suite of documents reporting to the European Commission on the findings of the Horizon 2020 funded project REVALUE in response to the call to examine market uptake in relation to energy efficiency. The overall purpose is to help the Commission better understand the reasons why there may be barriers to achieving their ambitious targets for decreasing carbon emissions through greater energy efficiency. The current targets are to achieve a 20% reduction on 1990 levels by 2020 and that the move to a low-carbon economy based on up to 80% reductions should be realised by 2050. Successive reports, notably from the IPCC (Inter-Governmental Panel on Climate Change) have identified buildings as major sources of carbon emissions (Bosteels and Sweatman, 2016).

The current project flows from an acknowledgement that improvements to the building stock are vital to achieving EU targets as it is acknowledged that the majority of stock is sub-standard. These improvements cannot be delivered by increasing regulations in respect of new buildings further as it is estimated that approximately 80% of the buildings that exist today will still exist in 2050 (Bastiaanssen et al. 2014). This means that targets can only be delivered through upgrading buildings to meet greater energy efficiency standards. However, the current annual residential refurbishment rate is neither focused on energy efficiency refurbishments (BPIE, 2011) nor sufficient to achieve the 20% EE target set by the EU's 2020 objectives. Indeed, the Commission Directive 2012/27/EU on Energy Efficiency, which aims to increase the annual refurbishment rate, would require a significant increase of investments, estimated at between €70-120 billion annually in buildings' energy efficiency (DG Energy (2014)).

The issue is therefore one of how to deliver the upgrades required. The introduction of a requirement for an Energy Performance Certificates (EPC) to be prepared and presented every time a building is offered for sale or rent on the market place is a key part of the strategy of achieving the objectives. By highlighting the energy rating transparently, purchasers (both owner-occupiers and investment landlords) and tenants are (in theory) able to make judgements as to whether the energy efficiency of a building is a factor that will influence their decision making process and if so, by how much.

If energy is a key consideration it is likely to impact on the price or rent that they (buyers and tenants) are prepared to offer. However, this will depend on the application of the theory of substitution. If a potential purchaser or tenant has a number of properties that they could buy/rent within their 'affordability' they will be able to make choices based on a wide range of criteria. Where however, choice is constrained due to a limited supply of stock within their budgets, then the criteria are also likely to be constrained. It is therefore likely that any observable impact on market preferences in relation to energy efficiency is affected by wider factors in the real estate markets. Traditionally, these wider factors in relation to residential values, both rental and capital, are location, accommodation including configuration, proximity to required services, accessibility, overall condition and, in the case of capital markets, aesthetics. The literature reviews carried out as part of Revalue, point to some development of a case for energy efficiency becoming a consideration but this has varied between locale and sub-market.

Whilst some participants in the market may make such judgements without taking any advice, in the majority of purchase/sales transactions and in some renting decisions, the parties will seek professional advice as to value. In the case of purchases supported by borrowed funds the role of the professional valuer is critical as their reported values will be influential in determining the amount of money that a lender will advance. Further, investor purchasers, even where not dependent on borrowed funds, often seek advice to ensure that the properties they buy will produce a return in accordance with their investment objectives. These objectives may be in terms of the rents they will receive, the prospects for capital growth, the likely future risks to the income and, in the case of social housing providers, any social objectives.

From the above, it is suggested that the role of the adviser to property market participants could be important to developing awareness of energy efficiency and, potentially, lead to greater clarity as to the extent to which the benefits that flow from more energy efficient buildings are reflected through the pricing mechanism.

Property advisers, notably valuers, normally belong to a professional body that sets expectations and requirements as to the processes that they observe when conducting their appraisals; further professional bodies control the competency

standards of valuers and provide guidance to ensure that valuers remain up to date and competent. The leading professional body for valuers globally is the RICS, who are Revalue project partners. The RICS both monitor the activities of their valuers through a process of registration, which is being 'rolled out' across Europe and beyond and through a requirement to adhere to their prescribed standards (RICS, 2017) and to guidance in relation to sustainability (RICS, 2011).

It is these suggestions that support the aim of the REVALUE project which is to "lead the development of appraisal norms and standards that recognise Energy Efficiency Value in social and private residential real estate" (EC grant document SEP- 210167930 p: 3). It takes as its standpoint that there are value benefits in energy efficiency (EE) but that, currently, these benefits "are not recognised in building appraisals and this is a barrier to investments in EE projects" (EC grant document SEP- 210167930 p: 3). Indeed, it goes further to contend that professional bodies which are responsible for setting the standards by which real estate valuers operate, such as project partner RICS, "recognise Energy Efficiency (EE) as a potential source of value, but do not require taking this into account in appraisals, nor provide clear guidance on how to do so." (EC grant document SEP- 210167930 p: 3).

It follows the issue of professional guidance to valuers in relation to energy efficiency fundamental to the Revalue project as the contention is made in the objectives that valuers do not take sufficient cognisance of energy matters for it to flow through to the end valuations. The RICS, through its global standards (colloquially known as the Red Book), provides the framework for the process undertaken by valuers in terms of their due diligence process, analysis of evidence and reporting. It does not prescribe the method of actual valuation: that is for the valuer, as has been upheld by the courts. Additionally, the Red Book, which is mandatory on practicing valuers, is augmented by and by a series of information/insight papers to alert practitioners to matters of interest/growing practice development. In terms of building in consideration of sustainability (including energy), the guidance to valuers is clear. It states (RICS, 2017: 138) that:

> "The role of valuers is to assess value in the light of evidence normally obtained through analysis of comparable transactions. While valuers should reflect markets, not lead them, they should be aware of sustainability features and the implications these could have on property values in the short, medium and longer term. The issues may extend to:
>
> - environmental matters including, where applicable, climate change
> - configuration and design including use of materials and concepts increasingly associated with 'wellness'
> - accessibility and adaptability, including access and use by those with disabilities
> - energy efficiency, building 'intelligence' and other 'costs in use' and
> - fiscal considerations"

In terms of collecting evidence and in recognition that evidence may be insufficient to enable a full analysis of comparability to be made the Red Book states that:

> "valuers are also 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. This could be particularly beneficial where the valuer is retained to provide regular reports to a client."

The Revalue Project Team has investigated ways of addressing the aims of the project through a number of avenues:

- A literature review and review of extant guidance and requirements (deliverable D1.1)
- A quantitative analysis of whether, and if so to what extent, there is an observable link between values reported by qualified valuers and energy efficiency characteristics as measured by their EPC ratings and by certain physical characteristic of a sample of large-scale social housing portfolios (deliverable D3.3);

- Analysis of the main typologies of dwellings and the ways in which energy efficiency can best be improved (deliverable D2.2).

- Case studies of selected social housing providers to establish how they make and evaluate their decisions in relations to energy efficiency improvements (deliverable D2.6); and

- Qualitative research among selected stakeholder groups to develop a deeper understanding of both the decision making process (housing providers) (deliverables D2.3), the link between financiers' lending decisions and energy ratings (deliverable D3.1), and lastly the due diligence process undertaken by valuers including their views as to links between value and energy efficiency.

It is with the last of these elements, namely the work of residential valuers, that this report is concerned. In particular, as detailed below, the Project Team sought to understand the position not just in relation to properties within social housing portfolios but within the private rented sector. The report details the findings of six 'Round Table sets of discussions undertaken in 2017 and then discusses the implications both for the professional body and the Revalue project findings.

Before so doing, the headline results from the other most closely related work packages (the literature review and the quantitative studies) are supplied to provide a context for this report. The **literature review** (deliverable D1.1) sought to analyse previous academic work in relation to energy efficiency and valued. This had revealed several academic studies which had found an observed link between energy ratings (normally measured by EPCs) and market rents and market values of residential properties in a range of European countries, notably Switzerland, Germany, the Netherlands and, to a lesser extent, England. The studies had predominantly been undertaken using hedonic price analysis[1] of large numbers of transactions and showed a range of outcomes, but in all a positive relationship had been observed. It had been noted that the literature was more advanced in relation to the commercial property markets than the residential; of the residential studies there had been very little attention paid to social housing.

The **quantitative study** for Revalue was different in that it used data from reported valuation – not transactions - and it was limited to stock belonging to social housing providers, which in most countries is subject to some form of 'rent capping' and may require different valuation assumptions. This is important as first, the findings rely on valuer judgement but second, the methodology used for valuing social housing does not necessarily relate to that used for pricing in the general market place. The study analysed portfolios in the Netherlands and England.

The Revalue analysis showed some connection between energy efficiency characteristics but the relationship revealed is weak and overshadowed by traditional value drivers such as location, size, specification etc. Further, the analysis was conducted over time and revealed a changing picture as relationships which were not observable in 2010 had become visible by 2015. Given that in 2010, the number of properties with EPCs was far less and knowledge of them thought to be poor, the change over time was predictable.

However, whilst the quantitative studies are useful in demonstrating a gradually emerging connection at the large-scale, they do not and, indeed do not attempt to, explain what is causing the relationship to change. In particular, they do not show whether or not the information supplied by valuers plays any, or any significant role, in determining the transaction values.

It was therefore considered important to undertake research to both verify the process undertaken by valuers in key member states engaged with Revalue and obtain the views of valuers both as to how far EE is a factor in determining market value and, if it is not a significant factor, what could change the position moving forward.

[1] Often using the methodology first developed by Rosen (1974)

Chapter 2 Methodology

As indicated in Chapter 1, the Revalue Project Team sought to understand better the relationship between market value of residential investment properties and their energy efficiency.

A number of qualitative research methods were considered including questionnaire survey, interviews and workshops. A decision was made to progress through workshops as:

- A previous questionnaire survey had been conducted, the results of which were published in 2016 (Michl et al. 2016). This had achieved a good coverage in terms of commercial valuers but not residential. A follow up survey had been attempted but had not obtained sufficient responses for meaningful analysis; a further attempt was considered to be unlikely to reveal any new meaningful results; and

- Semi structured interviews would have been possible but with interviews there is no opportunities for interviewees to interact with each other unless a Delphi technique is employed. In this case it was considered that few practitioners would have the time ability and commitment to take part in the successive interview rounds that underpin the Delphi technique.

The use of Round Table workshops was therefore chosen as it would give the opportunity to open discussions, not just between the researchers and the research subject, but between participants. It was intended that the workshops would, in a short space of time, enable the Project Team members to gain rich data regarding value drivers and the role of energy efficiency in terms of influencing values. The time element was important as practitioners work under tight time constraints and it was known in advance that they would be unlikely to be able to give more than 1.5 to 2 hours to the project.

In total the Team held a series of six workshops with small numbers of invited valuers all of whom were chosen for their expertise in undertaking residential valuation. The workshops all took place over the Summer of 2017 (June to September); three were held in England (London, Birmingham and Manchester) and one each in Spain (Barcelona), Germany (Berlin) and the Netherlands (Amsterdam). The variation in location meant that valuers working in different climatic zones and under different legal regimes and market practices were engaged in discussion. In total some 25 Valuers took part.

In almost all cases the valuers were RICS members and had experience in valuing residential units for secured lending and sale. However, in Spain, participants had less residential valuation experience as the majority of those undertaking residential valuations are not Chartered Surveyors but Tasadores who conduct valuation of domestic units for local banks. It is only where international banks are funding the purchase that it is usual to employ an RICS valuer. In some cases the valuers also advised portfolio owners.

It is acknowledged that the sample could not be regarded as fully representative of the whole valuer community; however, by ensuring that valuers were from different scale of firms and had varying ranges of experience in terms of location, property valuers, clients and purpose of valuation, the Project Team were assured that the views expressed would present a sufficiently robust sample to enable some inferences to be made.

Each Round Table was operated in a similar way as follows:

- Individuals were selected and approached (see Appendix 1 for a sample letter of invitation).

- Each workshop each took approximately two hours to allow time for participants to fully engage with discussion. The time of day varied depending on location and the local custom in terms of when participant would most readily be able to attend.

- Each workshop was run by a minimum of two project team members, including at least one valuer member of the team thus ensuring expertise to effectively engage with participants and capacity to prepare notes.

- All participants were assured anonymity.

- Each workshop was undertaken in two phases:

    - At the commencement of the workshop, a presentation was made to participants (see Appendix 2). This set out the aims and the extant RICS valuation guidance to valuers.

    - Discussion with participants was encouraged during the explanatory stage to establish the participants' knowledge of RICS requirements and guidance and their views as to the general engagement of market participants with the sustainability agenda in general and energy efficiency in particular.

    - During this phase the Project Team members allowed a free flow of ideas to promote discussion, especially in relation to the impact of EPCs.

    - In phase two, participants were supplied with photographs and brief details of three or four residential units of different typologies, together with a limited range of data relating to each. They were then asked to discuss what additional information they would require (gained by inspection of by request back to the client) together with the approach they would take to the valuation.

    - A decision was taken not to record proceedings in case this stifled a free flow of discussion but following the workshop all participants were sent a write up of the notes taken and asked to comment as to accuracy and to provide any further reflections that considered appropriate.

    - Each workshop was conducted in English except for the one in Barcelona which was conducted in a mixture of English and Spanish with simultaneous translation being provided by a member of the Project Team.

It is recognised that the method and logistical arrangements could be implied to involve some bias in results as a result of the way in which the participants were chosen as well as the active involvement of Project Team members in the discussion and in the informal way that questions were framed. It was also possible that participants could influence (and be influenced by) each other during the discussions.

Finally, as one of the prime objectives was to establish the extent to which valuers were examining energy efficiency as part of their due diligence process and reflecting it within their valuations, there was a risk of bias inherent in providing information as to aims of the project and the RICS extant guidance in the initial stages of the workshop as this could have 'anchored' their thinking (Diaz, 1997) or produced an observed participant effect[2]. Whilst recognising these potential issues, the benefits of free-flowing discussions within a common framework was intended to enable reflection during the session and consensus building.

Chapter 3 now considers the findings from the Round Table under themes that arose during the discussions.

[2] Sometimes referred to as the 'Hawthorne Effect'.

Chapter 3 Findings

In this Chapter the main findings of the Round Tables are considered under the main items of discussion.

The role of RICS and the Valuer

At the start of each workshop the main objectives of the Revalue project were outlined together with the RICS guidance on considering sustainability matters within the valuation process. Given that the 2017 edition of the 'Red Book' had only just been released and (depending on the date of the Round Table) was not yet in force, the Team were keen to establish whether valuers were fully conversant with the content, including its revised working in relation to sustainability and the due diligence process. At each event valuers demonstrated very good knowledge of all Red Book matters (including the 2017 changes).

To support the Red Book RICS issues guidance and information; in relation to sustainability the only formal guidance relates to commercial; in relation to residential there is a UK information paper only, published in 2011. Of this some of the UK valuers were aware but not all, although the subsequent discussion on the process adopted and factors considered demonstrated that valuers, whilst they may not have been familiar with the document, nonetheless were alert to the issues raised in it.

Given that three of the Round Tables took place in mainland Europe, the participants were asked whether they also (or in parallel) used the so-called Blue Book of valuation standards published by TEGoVA (The European Group of Valuers Association, 2016). It was only in the Netherlands that any use of Blue Book was mentioned as many valuers hold Registered European Valuer (REV) status which is the TEGoVA accreditation scheme. Even here, whilst Blue Book is used, banks and housing providers specify that valuations are carried out in compliance with the Red Book. Where Blue Book is used, it was pointed out that this too placed some considerable emphasis on energy and sustainability matters, where they were pertinent to value.

The role of the client and the nature of instruction

In 2012 the RICS conducted a survey of valuers in the UK, Germany and Switzerland[3] in which valuers were asked, inter alia, whether they had been asked to consider sustainability explicitly within the instructions received from clients. At that time just over 60% of UK valuers and 30% of German valuers had not been asked any questions about sustainability. Where they had it was primarily in connection with investment valuations, and to a lesser extent, secured lending. These findings reflected primarily to commercial valuations but provided a 'backdrop' to the Round Tables.

In discussion it was reported that, where an instruction was given to supply a market valuation, there were normally no specific instructions given in relation the energy efficiency of the EPC data of the building, although it was reported from the Spanish Round Table that some banks were beginning to ask for EPC certificates and base some of their decisions on it as, to quote one participant "they don't want to lend if the property has a low certificate". By contrast, it was reported that the lending criteria did not differentiate between energy ratings. Overall the prevailing view was that, in relation to secured lending, energy efficiency was not actively considered by the client as something that the valuer should report upon.

A key consideration from the lender perspective was that the fee, paid by the borrower, should be kept low. This has the effect of restricting the amount of due diligence that the valuer can undertake and the extent of time available for inspection. Where the purchaser wishes for a greater level of detail a building survey, in addition to a valuation, will be conducted. This may, depending on the instruction and the skill and competence of the valuer, be undertaken by the valuer; more likely it will be undertaken by a Building Surveyor or building engineer/ technologist.

The situation was not necessarily the same in relation to portfolio valuations, for which valuers typically prepared discounted cash flow (DCF) analyses to arrive at a net present value (NPV). Here, it was confirmed that energy would

[3] The results of this were subsequently published in Michl *et al* (2016)

be a consideration, but primarily because of the nature of the methodology, not the specific instructions of the client. It was also confirmed that the level of fee in this case may be higher, but will still be lower than that for a full building survey.

As indicated above, the Red Book has been upgraded twice (2014; 2017) in recent years with a strengthening of guidance to valuers in respect of both collection of data and reporting. However, valuers reported that in most cases the situation in relation to instructions had not changed significantly since 2012. Few clients asked for energy efficiency data and in the case of portfolio valuations for book purposes, clients often did not hold adequate or appropriate energy related data to pass on to valuers for consideration. Where they did, the impact on value was still not clearly apparent as any energy savings accrue to the occupant, not the landlord. Therefore, in assessing the net present value to the landlord, the operational cost savings are not included. The only capital value impact relates to a possible reduction in the discount rate applied as there was the view that long-term risk is reduced where the portfolio is more energy efficient.

Both in England and Netherlands it was reported that some banks were beginning to ask questions and in Spain it was reported that some institutional investors moving in to the residential markets and they 'taking it more seriously' and do not wish to lend on property that is poor quality. However, as a caveat to that, it was reported that in Spain, where there are often low building standards and high vacancy rates, the quality of construction may be more of a value issue than in locations where demand outstrips supply and is likely to continue to be the case.

One further relevant factor that relates to instructions is the increasing use of Automated Valuation Models (AVMs). These are increasingly employed for routine secured lending valuations. Where they are used, no physical inspection takes place and the algorithm, which varies from provider to provider, normally does not take account of such fine-grained data as the heating/cooling systems and types of windows or even the EPC. As such AVMs currently cannot and do not differentiate their valuations by any consideration of energy efficiency.

The Impact of EPCs on Value

An EPC is not always available so it not a standard due diligence investigation

The role of the valuer is to act in accordance with the client's instructions but specifically to reflect the market conditions – and this means reflecting what a potential buyer might consider. It also means that they must inspect and investigate property characteristics and title issues that are likely to impact on the value of the property.

To find, at a granular level, what factors might be considered the participants were presented with photographs and brief details of three or four typical residential units. However, information on energy efficiency deliberately was not supplied in order to assess whether it was a factor considered by valuers aside from any direct instruction.

What became clear from the discussions was that the EPC was not necessarily a factor that valuers would routinely seek to obtain, despite the Red Book advice to collect sustainability where this is available. The reasons cited for this were consistent country to country and were two-fold. First, the EPC is often not available when the valuation is being undertaken and second that the EPC, as discussed below, was not generally perceived to be a driver of value.

Many valuations take place for mortgage purposes when a sale has been arranged. Valuers confirmed that, despite the EU requirement that an EPC should be in place when marketing takes place, they were often told that it was 'in course of preparation'. Therefore, the valuer may well not have one even when they should. However, they also pointed out that there are many occasions when a property is valued and there is not a recent EPC or indeed no EPC at all.

This will occur when:

- the valuation is for accounts purposes and the property has not been transacted or let since the introduction of EPCs and no letting or sale is in contemplation;
- the property is exempt from the need for an EPC;

- the EPC was undertaken using a previous methodology but within the 10 year limitation period; or
- the property has been significantly altered since the EPC was undertaken.

Therefore, in many cases, it is simply not possible to include explicit consideration of an EPC on value.

Valuers also confirmed that they seldom were specifically instructed to report on the EPC of the property. Valuers pointed out that, despite a notary being required to have sight of an EPC before a transaction could complete, many rental transactions do not require a notary and in this case, it is likely that no attention will be paid to the obligation to obtain an EPC. In terms of market interest in the EPC, as one valuer in England said "EPCs – who looks at them? Vendors hate them, and purchasers aren't interested."

It must be borne in mind that, as confirmed through the Round Tables, in many cases valuers' engagement with residential property is in the capital markets, not the rented sector, because in the latter, the parties to the transaction may well not be represented. In both England and Spain, the point was made that for rented properties, the 'professional' sector is small, with the market being dominated by numerous private landlords who tended not to seek professional advice. However, for the burgeoning professional build-to-rent market, or for social housing, there will be an insistence on obtaining an EPC, although valuers in all countries were consistent in their views that it is primarily a 'tick box' exercise. Only in Spain did valuers report a growing interest by banks in EPCs with valuers quoting some cases where the bank not only require sight of the EPC but may be influenced by the rating.

Additionally, there is little reliance on the EPC as an accurate measure of energy efficiency

In discussing the potential of EPCs to have impact on reported values, participants were of the opinion that the results were often an inaccurate measure in terms of assessing energy efficiency. Valuers said that they only see the end figure – the actual calculation is a 'black box' and, particularly in England, the ratings contained in the certificates were often regarded as inconsistent and recommendations inappropriate. In illustration, valuers reported cases of new identical buildings being given different ratings, whilst valuers in both Spain and Germany reported that the variance in methodology across the country was not helpful in providing consistency of data. In Spain the point as made that under their methodology the certificate measures carbon whereas what matters to market participants is the efficiency of the heating and cooling systems and the actual bills. EPCs therefore were an environmental measure – and not one that impacts directly on the occupier.

One of the issues leading to a lack of trust in the assessment, is that, in England, where an assessor is unable to view an element (such as whether there is cavity wall insulation), the normal procedure is to rate that element at a default to a standard assumption. This may result in the certificate being inaccurate. Further, it was reported that, as it was viewed by commissioning parties as a 'tick box' exercise, clients would obtain the certificate for the cheapest price possible; this often meant an inadequate inspection by someone with minimal qualifications. Overall, there was a view that the certificates were too simplistic and take no account of key factors that can influence performance such as micro-climatic conditions and whether or not the property is in an exposed position: all of which can impact on the energy performance and most appropriate measure to conserve energy or reduce the need for consumption.

The reported issues around accuracy of EPCs has led in England in particular to a lack of trust in the reliability of the certificates, albeit that it was acknowledged that the quality had improved since the recasting of the Energy Performance in Buildings Directive in 2010, which led to changes from 2012. However, in England the quality and quantity of training of those carrying out EPCs remained an issue; many have no construction background and have undertaken little more than a day's training. The result was a lack of skills to arrive at an accurate judgement. In Spain, whilst accuracy is less of an issue, as they are normally prepared by Tasadores, who have a strong engineering background, training still is a concern with valuers are prepared was reported to 'keep changing' and with 'the method varying from region to region – so there is a lack of consistency'. In Germany and Netherlands, the lack of trust was not so significant and in the Netherlands lack of accuracy was not deemed an issue, possibly as the average rating tended to be an issue.

Finally, it was noted that, in England the matter of EPC ratings was beginning to command more attention due to the impending imposition of minimum energy standards requirements on the lettings market. However, given that in most

areas values are dominated by owner-occupier demand, it was unlikely to skew values significantly. The impact would fall in areas where there is a strong letting market of older, less efficient housing. It would not impact social housing as this is exempt from the regulations, despite forming close to 20% of the housing stock.

EPCs and Value: Summary

In summary, the EPC was not normally perceived as an essential data point in terms of assessing value as they were not a key factor affecting the behaviour of market participants. However, as reported below, this did not mean that valuers were not cognizant of, or apply value to, some energy characteristics. Further the EPC is not generally regarded as a helpful measure in assessing the energy performance of a building. With the exception of the Netherlands, where certificates tend to be higher, valuers generally reported that the EPC is often not a reliable indicator of energy efficiency. This may be because the method keeps changing (Spain) or there are different concurrent measures (Germany and Spain) or the level of education and training of those preparing the EPC is too low leading to inconsistent results (England). Overall, many valuers expressed concern at the regulatory reliance now being placed on a measure they perceived to be 'fundamentally flawed'.

A Data Deficiency

Valuers at each Round Table agreed that for valuers to be able to better reflect energy factors explicitly into their valuations, good, reliable data is required. However, having generally agreed that EPCs do not provide sufficiently consistent and accurate data to inform the market (and hence the valuer), they were asked what other data points could be used.

Valuers confirmed that to the purchaser or tenant, the actual bills are of more importance than the certificate, but in reality, there is normally very little data available to them when they conduct their inspection. It was agreed that what would help the valuer would be reliable performance data on boilers, cooling systems etc. so that this could be considered. In the case of portfolio valuations, some additional data may be available, for example, where tenants pay a service charge for energy. Further for social housing, the management department may hold data in respect of costs of consumption and should hold details as to the condition/service record of heating and cooling systems. In such cases, this can be reflected in the valuer's cash flow analyses. However, for individual units this is not normally available.

Energy Related Construction and Services

During the Round Table discussions, valuers were asked about the impact of specific features on value. As expected the traditional factors of location, accommodation and overall condition of the premises were the key drivers. However, consideration attention is paid to the presence and condition of many characteristics and features which have an impact on energy efficiency and these in turn often do have an impact on value. Such factors are recorded, analysed and reported but the impact on value will be determined by local market conditions and the value band of the property.

There was a general agreement that in cooler climates insulation is important: to walls and windows in particular. Roofs are not always inspected as part of the brief – but it was agreed that this might be important; however floor insulation was not mentioned as a key factor. Within every country except Spain, double glazing is now the expected 'norm'; where it is not present the value may be reduced to reflect the lack. In Germany it was stated that the expectation is now moving towards triple glazing.

It was acknowledged that wall insulation may be difficult to assess during a valuation inspection, and if it cannot be seen and no building construction data is available, it is not possible to integrate into the valuation. Valuers in England expressed that view that, whilst good insulation to a property was important and lack of it could detract from value, there had been many instances where cavity wall insulation had led to water penetration through the cavity leading to dampness in the house; this was so common that it was undermining any added value relating to cavity wall fill; indeed it could in some cases result in a value decrease in areas where failure had occurred often.

External wall cladding was discussed but given that the Round Tables too place shortly after the Grenfell fire disaster in London, views might have been influenced by that. Overall, it was reported that valuers are now cautious about the

implications of cladding systems installed for insulation purposes on value and would require a lot more information about cladding or they would have to place 'caveats' in their reports.

PassivHaus construction was discussed in England but not elsewhere; valuers' views varied but overall did not see this method as sufficiently accepted as to make a positive effect on value.

Discussion of renewable technologies took place, notably solar and photovoltaics (PVs) and ground and air source heat pumps. In terms of PV and solar panels, mixed views were expressed, largely depending on the market setting. Where schemes are in place to offer good rates of pay for energy generated to be sold back to the grid, this might justify some additional value based on the income produced but otherwise there was a consensus view that they did not add value. This is especially the case as some older installations are now giving rise to maintenance issues.

In terms of other energy efficiency technologies such ground and air source valuers expressed the view that they tend to be expensive installations but often do not generate the anticipated performance and are no trusted by buyers. They are not a 'value add' feature in most places.

From the discussion, it was apparent that to buyers and tenants alike, key value considerations were double glazing and efficient cost-effective conventional heating systems. A lack of these could result in the valuer lowering their valuation against the market norm.

The Round Tables also discussed constraints on values or rents chargeable, particularly in relation to the social housing sector. Here the considerations were slightly different depending on the rent controls in place. For example, in Germany the 'Mietspiegel' sets out a formula to determine the maximum level of rent that can be charged; rental controls and formula are also drivers in the Netherlands and in England legislative 'capping' on social housing rents mean that investment in energy efficiency measures cannot translate back to rent which in turn means that the impact on capital value is likely to be minimal.

Overall the picture that emerged from the discussions, particularly those generated by consideration of the example properties, revealed that some readily visual energy–related characteristics, such as the presence of good quality modern heating systems, double/triple glazing and effective wall insulation are all factors which feed into the valuer's judgment. Characteristics which are less readily detected during an inspection, and/or for which data is not provided will not feed through directly into the valuation as the valuer seeks only to reflect items which will influence a potential market player. However, some newer technologies are as yet unproven in terms of performance and are not sought after by tenants and purchasers. They will therefore not add value, and, as with some technologies that have been seen to fail, can in some cases lower value.

Skills of the Valuer

A valuation is normally carried out by a fully qualified professional valuer. A valuation is a different instruction from that of a building survey in which a far more 'forensic' examination of the building fabric takes place. Within a residential context, it also normally commands a lower fee. To the valuer, the building is viewed within its social and economic setting and assessing a wide range of considerations, including scarcity, local amenities, comparable sales data, finance availability etc., Assessing the impact of all of these in determining how much someone will or can afford to pay to buy or rent, is a core part of their competency.

As part of their training they will have been assessed in their ability to inspect properties, which includes a fundamental knowledge of construction and property maintenance issues. However, many valuers now have an economics or business background; they are not building technologists and so will not have a detailed knowledge of construction, building services and energy technologies. Where they do consider that value is likely to be influenced by such considerations, they have a duty to report to their client that additional survey work is required to be undertaken by an appropriate technologist.

Of the four countries in which the Round Tables were held, it is only in Spain that many valuers have a prior education in construction or engineering. It follows that, unless the initial inspection by the valuer reveals some factor which they

consider could be material to value and could, if revealed, influence a bid price, the valuation will be dependent on an inspection only of readily accessible features.

Therefore, the Round Tables confirmed that to achieve a closer integration of energy assessments within a building inspection to underpin an opinion of value would require not just greater cost and time, but the input from an energy or building services specialist. This is not normally feasible for valuation for sale or secured lending. However, for portfolio valuation for 'book purposes', data made available by facilities and property managers can be integrated into cash flows.

Chapter 4 Summary and Conclusions

The Round Tables were held with the purpose of developing a deeper understanding of valuers' views on the impact of energy efficiency on the value of residential properties. In order to do this, participants were presented with brief details of different, but typical, types of residential units as a stimulus for discussion.

Conclusions from a range of academic studies had observed a link between energy efficiency, normally measured in terms of the EPC and market rent and market values. However, whilst these large scale hedonic analyses had suggested a link, observations from practising valuers had indicated no such relationship. The Round Tables therefore sought to unpack this seeming disconnect.

Those who took part in the Round Tables, held across four study countries, were generally well experienced practitioners, of varying ages and from a mix of large and smaller practices. Their prevailing view was that EPCs are not a measure that is generally influencing behaviours in the market place but that does not mean that energy efficiency is not a factor within value. EPCs are a variable measure depending on the country. They are 'black box' and not well trusted by either market participants or valuers. However specific characteristics such as double glazing and heating/cooling systems and insulation are factored in and may, where deficient lead to the reporting of a level of 'brown' discount.

Below we set out the headline conclusions and summary of key findings arising from the discussions. This is followed by some reflective comments and inferences.

Summary of Key Findings

The instruction from the client is critical; many do not specify consideration of energy matters

Valuers confirmed that they act in accordance with client instructions and in compliance with professional regulatory codes. The latter have recently been revised and give greater guidance and encouragement to valuers to consider sustainability data where it is available. When the instruction is to provide a market value, normally there is no such specific instruction given by clients in relation to reporting on the contribution of the EPC or other energy data within their reports; further the fee basis is often insufficient to support detailed investigations regarding energy data, especially where market evidence would suggest it is not likely to have an impact on market participant behaviours. However, banks are beginning in some cases to ask for comment.

Valuers also prepare investment valuations using discounted cash flow (DCF) techniques when acting for portfolio owners. In these cases the data made available to valuers may include more specific energy data which can be factored in to the cash flow analysis. However, valuers confirmed that often any cost reductions resulting from energy efficiency measures may not enhance the net cash flow if the cost savings are enjoyed by the tenant – not the landlord. In this case the only impact on value is on potentially reduced investment risk. Finally, it was noted that where rental caps are statutorily imposed, any energy efficiency improvements can only be included in the calculations by adjustments to the discount rate and the potential for future gain.

Valuers have found little evidence that EPCs ratings impact on the market value of residential assets

Valuers in all four countries in which discussions took place confirmed that EPCs, even where available, were not a key factor affecting the behaviour of market participants and, in turn, their assessments of market value. Differing levels of trust in the accuracy of EPC were reported but overall, they are not deemed to be reliable data in terms of accurately assessing the true energy efficiency of a property. Whilst there was an acknowledgement that over time accuracy had improved, notably since the re-cast of the regulations applicable from 2012, it was reported that even in new builds they could sometimes be inconsistent ratings. The result is that most market participants were simply not factoring in EPC levels into their offer prices. In turn, valuers, who are under a professional obligation to reflect, not lead, the market, do not generally factor the level of certificate rating into their valuations; they tend to report it as a 'tick box' exercise. Traditional value drivers such as location, specification, configuration, size and condition still dominate. However, for England's, the residential investment market, the impending imposition of minimum energy standards requirements was

noted as beginning to raise the profile of the issue. But where high demand for housing prevails, valuers consider that economic and traditional factors will continue to prevail.

Some features which enhance energy efficiency are increasingly regarded as 'normal' and a brown discount may apply if they are missing

EPCs may not directly relate to reported market values, but the specification of dwelling expected as a 'norm' in the market place will reflect some features which can increase energy efficiency. Where they are expected, the valuer may apply some level of 'brown' discounting to reflect that a purchaser would normally expect to expend capital on upgrading, albeit that this may be less than the actual anticipated costs. The energy efficiency features that do have a bearing vary by geography, typology and sub-market. For example, double or even triple glazing is an expectation in northern Europe, whereas an efficient cooling system is more important in southern Europe. Valuers reported that features such as wall insulation, which are not easily visible, are less likely to influence values but, in some cases, where installation has been poor dampness can occur, leading to a value decrease. The resultant picture is therefore complex in terms of the relationship between any individual upgrade measure and any possible value impact.

Some Valuers may lack the knowledge to do energy assessment

A formal valuation is not a building survey and in most countries valuers have limited training in the technical aspects of energy assessments, though all were confident and competent in building inspection. It was only in one country in the study (Spain) that valuers tend to have an engineering educational background; elsewhere they were more likely to have had a business or economics-based education. Achieving a closer integration of energy assessments within a building inspection to underpin a valuation would require not just greater cost and time, but the input from an energy specialist. This might be appropriate in some cases, but is outside the normal scope of due diligence for a valuation. Even then, not all data are readily available and in the absence of any objective measures that directly links the energy performance of a dwelling to its value, it is unlikely to form part of a client's instruction.

Inference of the Findings

The inference of these collectively is that it is important to understand what the role of the valuer is and the limitations of a valuation. Valuers do not make markets; they reflect them. Their skills and expertise lies in interpreting data as supplied by clients and gleaned through their inspection and due diligence process. Currently, EPC data is the only 'standard' data relating to energy and even this is not always available or, if it is available, trusted to be accurate. Other data relating to costs and performance of the building are not available to either market participants or valuers.

What can be discerned is that markets are moving – if gradually. The expectation of what is a 'normal' expectation in relation to energy efficient characteristic is changing. Properties that fall short will face discounted values – a 'brown' discount'; however, properties where technologies have been introduced that are not yet proven or have developed reputational issues, may well not reap a value premium; they may even decline in value.

Given the role of the valuer as an observer and reflector, the inference of these findings would seem to suggest that it is unrealistic to suppose that simply changing guidance on inspections carried out by valuers will be a potent force for change. However, valuers report that lenders are beginning to enquire about energy – and if they do and build it into the funding of purchasers this will provide a market stimulus to which valuers will respond, although in some cases the level of inspection and due diligence would require to be increased. Buildings are complex- and the types or interventions that will be required to ensure that upgrade targets are met is will need often individualised solutions, not a reliance on interpretation of EPCs. Valuation and valuers have a role to play in highlighting and interpreting issues – but only a part.

Appendix 1 Sample Letter of Invitation

Dear XXx

We are writing on behalf of the Revalue Research Team and the RICS to invite you, or members of your team for which it would be appropriate, to participate in a Round Table workshop on the valuation of residential investments as part of a research data gathering exercise.

The workshop will take place on XXX at XXXX between 8.30am and 10.00am at XXXXX.. It will be run by 2 of the Revalue Team – Fiona Haggett (RICS UK Valuation Director) and Prof Sarah Sayce (project adviser and member of RICS Valuation Board).

Revalue is an EU Research Project funded under the Horizon 2020 programme and has the aim of developing understanding of the impact of energy efficiency factors on the value of residential rented stock in selected European countries. Further details of the project and the consortium partners can be found at http://revalue-project.eu/

As a result of the project, which is due to complete in 2018, it is intended that RICS advice to valuers, currently contained in the Red Book and IP 22/2011 (Sustainability and Residential Property Valuation) will be reviewed and updated.

The aim of the workshop is to bring together in different locations residential valuers with expertise in portfolio valuation and/or secured lending to discuss the approaches currently being used in practice towards residential valuations, especially in relation to energy and other sustainability factors. The Team would also like to explore with you the trends you see in the market place and they will share some early research findings.

Refreshments will be provided and the event will count as 1,5 hours structured CPD.

I do hope that you will accept the invitation. To do so please reply to XXX, advising who will be attending, by XXX. If you have any queries about the nature of the workshop please email Fiona at fhaggett@rics.org.

Yours sincerely,

Appendix 2 References

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Bosteels, T. and Sweatman, P (2016) for Sustainable Real Estate Investment: implementing the Paris climate agreement: an action framework UNEP- FI (United Nations Environment Programme – Finance Initiative available at http://www.unepfi.org/publications/investment-publications/property-publications/sustainable-real-estate-investment-2/

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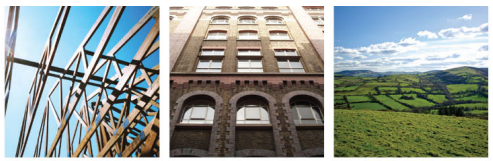
RICS (2013) Sustainability and Commercial Property Valuation: A guidance note 2nd Ed available at http://www.rics.org/Global/Sustainability_and_commercial_property_valuation_2nd_edition_PGguidance_2013.pdf

The European Group of Valuers Association (TEGoVA) (2016) European Valuation Standards (EVS) available from http://www.tegova.org/en/p4912ae3909e49

Appendix 3 Example of the Roundtable Templates

ReValue Round Tables

Fiona Haggett, FRICS , RICS
Prof Sarah Sayce FRICS, Royal Agricultural University
Catherine Smith, Savills



Introduction and Purpose

- This is a part of the data gathering for an European funded Project: Revalue
- It is one of a series of 6 round tables planned for June/July 2017
- 3 in England and 3 in mainland Europe (Netherlands, Germany and Spain)
- We are looking for your expertise in valuing residential rented stock to help inform the researchers and guide the outputs
- All views will be treated anonymously but we would like to record that you took part
- We will be happy to share our findings with you

So about revalue ……

The ReValue Project

What is ReValue?

- Three-year project to develop/revise **international guidance for property valuers relating to Energy Efficiency (EE)** .
- Aims to **help valuers to reflect the value of EE**, in their valuations of **social and private housing stock**.
- By **increasing awareness** of impact of energy efficiency on value among lenders, investors and valuers, aims to **promote advanced market practices** and support and **encourage market transformation**.
- Focuses on revising and strengthening the requirements of **due diligence** and r**eporting** in relation to the energy efficiency and sustainability characteristics of residential properties.

From this it is clear that it ties in with revisions to Red Book & supplemental guidance

The ReValue Project

REVALUE

Bax & Willems
Consulting Venturing

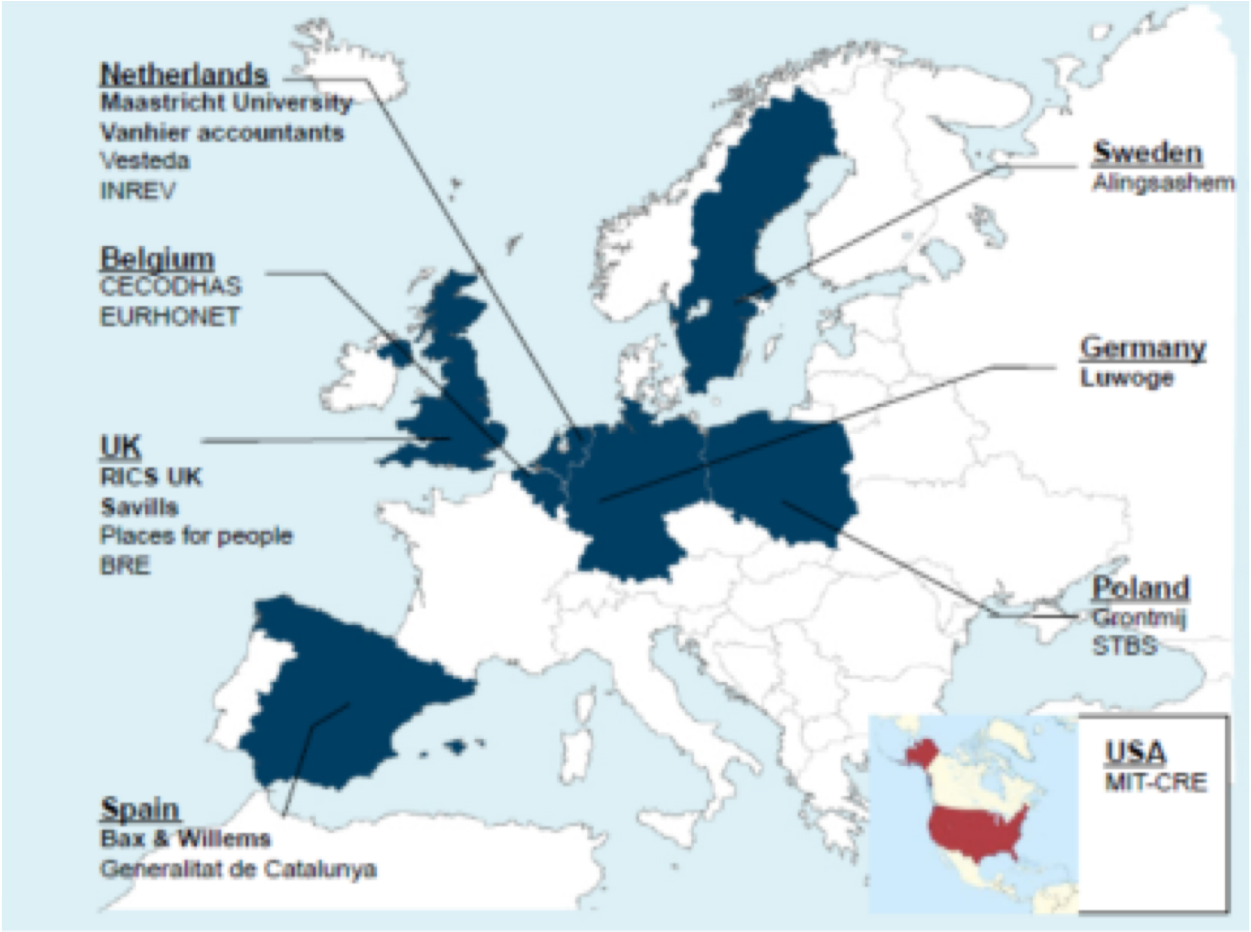
savills

RICS®

Maastricht University

vanhier
MKB accountants | adviseurs

A Cross-section of European Countries



Co-funded by the Intelligent Energy Europe Programme of the European Union

The Known Challenges of ReValue

- Working across European countries with **differing legislative** and **cultural** contexts
- Both Germany and Netherlands have a high **% of rented stock**: in Netherlands 1/3+ of all dwellings are social rented sector – in UK 37% rented split roughly equally between Social and Private Rented
- **House prices inflation / rental values and controls/ energy costs/ costs of retrofit** vary across countries – these are all factors feeding into value and the business case. It also sets the scene for entrenched behaviours
- ***Therefore care needed in terms of creating the business case***
- Most research in residential has concentrated on transformation **in owner-occupied markets** – where **the split incentive issue** does not exist
- The 'gap' on which ReValue concentrates is **the residential rented sector – primarily portfolio owners**: both social sector and the newly emerging (in UK) institutional or specialist property company holdings

Re-Value: Empirical Work

3 main elements

- **Examining the typologies of buildings** in a range of housing investment owner portfolios: developing a deeper understanding of types of retrofit possibilities against differing housing stock and the decision making process
- **Regression analysis of case study data** to establish whether the differential values found in the academic literature are replicated in social housing stock
- **Qualitative data collection**
  - Interviews with housing providers and funders to establish their business case and barriers
  - Scenario exercise with valuers about how they actually integrate EE (if at all) in practice

All of these will feed into the revisions to the Guidance and provide recommendations for portfolio owners and report on the prospects for greater EE adoption for EU

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Current Guidance to Valuers

Various sustainability related guidance, guidelines and requirements for valuers

Red Book 2014

Valuers are recommended to:

- Assess the extent to which the subject property currently meets sustainability criteria and arrive at an informed view on the likelihood of these impacting on value,
- Provide a clear description of the sustainability-related property characteristics and attributes that have been collected
- 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 and
- Provide a statement of the valuer's opinion on the potential impact of these benefits and/or risks to relative property

The Red Book 2017

W.e.f July 1st

- Inspections: in respect of sustainability and environmental considerations, it is "*essential that valuers have proper regard to their relevance and significance in relation to individual valuation assignments.*"
- Data: Collection*: valuers are also strongly advised to collect and record appropriate and sufficient sustainability data*
- Lending Valuations: *Sustainability factors are becoming a more significant market influence and that valuations for secured lending should always have appropriate regard to their relevance to the particular assignment.* and
- *Comment on maintainability of income over the life of the loan (and any risks to the maintainability of income), with particular reference to lease breaks or determinations and anticipated market trends – this may well need to be considered in a broader sustainability context*

The Way the Workshop will work (1)

- We will supply you with photographs and brief details of several residential properties.
- Taking 10 minutes first individually, please write down:
  - Your initial impressions of the aspects in respect of sustainability and in particular energy that you would wish to investigate.
  - What information would you expect the commissioning client to provide for you? (please write this down and pass to us – keep a copy)
  - What additional information would you wish to see in order to conduct appropriate due diligence? (please write this down and pass to us – keep a copy)
- In a group please compare your notes – did you identify the same issues?
- We will then have a discussion regarding the adequacy (or otherwise) of data to impact on valuers' views..

The Properties

(1) A rural village towards the East Coast

- Built in 2013
- Semi-detached 2 bedroom/4 person unit
- PassivHaus standard

The Properties

(2) A low value town, close to the town centre

- Built in circa 1900
- Terraced 3 bedroom/6 person unit
- Conventional construction

The Properties

(3) A Regional City, suburban location

- Built in 1979
- Bedsit flat in social housing block
- Framed construction

The Properties

(4) A Regional City, City Centre

- Built in 2014
- 1 bedroom/2 person flat
- Framed construction

Comparing with the *Academic* View

- A series of studies would indicate market differentiation due to energy characteristics
- Do the Round Table findings concur – if not why not?

Residential studies: overview 2013- 2015

Study/Author	Year	Country	Sustainable features	Impact	Positive(√) or not (x)	Magnitude
Hyland *et al.*	2013	Ireland	EPC rating	Rental/Sales	√	generally positive but more likely to matter when economy poor
Cajias & Piazolo	2013	Germany	Energy consumption/EPC category	Rental/Sales/Return	√	1% decline in energy use leads to).15% increase in return; 0.08% increase in rents and 0.45% increase in CV
Stanley *et al.*	2015	Ireland	Energy Performance Indicators	Sales price	√	increase of 1% per grade - but need to be careful on interpretation re age of building
Yang *et al.*	2015	Denmark	Energy source and products	N/a	N/A	Different types of consumers adopt differing approaches - depending on their priorities (VFM; green etc)
Fuerst *et al.*	2015	UK (England)	Energy efficiency	Sales price	√	positive influence-but more for flats/terraced than detached

Residential studies: overview 2016

Study/Author	Year	Country	Sustainable features	Impact	Positive(√) or not (x)	Magnitude
de Ayala *et al.*	2016	Spain	Energy efficiency judged through household surveys	Sales price	√	5.4% and 9.8%
Bond and Devine	2016	USA	LEED	Rental	√	8.90%
Brouen and Aydin	2016	Netherlands	transparent EPC on sales	Sales price	√	A label quicker to sell and 2% premium against a D; G rated slower and 13% brown discount
Fuerst *et al*	2016	UK (Wales)	EPC grade	Sales price	x	higher grade sell for more - but not necessarily due to EPC label
Wahlström	2016	Sweden	Energy efficiency feature /energy consumption	Sales price	mixed	Consumption has no impact; presence of construction features that lead to efficiency are desired

Summing up the evidence from the residential sector

- Most studies to date have linked values to energy labels via hedonic regression – requires accurate isolation of factors: do they /can they adequately do this – given 'emotive' factors in residential purchase decisions?
- Strong conclusions hampered by extreme heterogeneity- and regulation in some countries (concentration on studies in cold climate?).
- Behavioural studies show a variation in response depending on demographic type, type of energy and how the possibilities for refurbishment are presented.
- Value advantage of energy efficiency increasingly recognised – in places such as Germany, Switzerland, Netherlands and Denmark.
- There is a connection with the state of the market conditions.
- The research is focused on sales and rent – but far less on the residential investor issue
- Residential investors far harder to understand – as diverse group.. Apart from social housing landlords

Conclusions and Next Steps