

Practice papers

Energy efficiency of buildings: The business case

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ABSTRACT

Energy efficiency as a concept came to the fore in response to the oil crises of the 1970s. Energy demand reduction is essential as native energy supplies dwindle, to improve energy security and to meet carbon emissions targets. Globally, it is estimated that 30 to 40 per cent of energy is consumed in buildings and, therefore, it is vitally important that improvements are made to the energy performance of the built environment. Consequently, energy efficiency is an area of focus for both EU and UK policy

and regulation. Furthermore, owners and occupiers are increasingly demanding more efficient buildings. This paper explores the business case considerations, summarises relevant policy and regulation; outlines market drivers and includes a case study.

Keywords: *energy security and efficiency, policy, carbon emission reduction, UK's competitiveness, Energy Act*

BACKGROUND

European context

The oil crises of the 1970s kick-started an ambitious energy efficiency drive within Europe and this has been ratcheted up since 2000. The most significant indication of the policy direction in the EU has been through the Energy Efficiency Plans (EEPs), introduced in 2000, 2006 and 2011. The plans included targets to improve the performance of buildings, introduce energy supply obligations and cogeneration (combined heat and power). They also covered the energy supply chain and not just demand.

Two key EU directives are particularly relevant to energy efficiency at a European level; they are Energy Efficiency Directive (EED) and Energy Performance of Buildings Directive (EPBD). The Energy Efficiency Directive, approved in 2012, was the legislative result of the EEP that was published in March

2011. The directive focuses on targets; notably that member countries are to achieve a 20 per cent reduction in energy consumption by 2020.¹ The target is set as part of an overall drive to reduce energy consumption across the entire EU. This is especially relevant at the moment given the political unrest in Ukraine that has created supply and market volatility. It is estimated that 30 per cent of the EU's gas originates from Russia, with 80 per cent of it reaching the EU via pipelines in Ukraine.²

Improving the energy performance of Europe's buildings is one of the priority areas for energy efficiency policy in the EU. Internationally, 30 to 40 per cent of energy consumption is in houses, public and private offices, shops and other buildings;³ in the UK, the government estimates it to be 40 per cent.⁴ As the Commission's March 2011 Energy Efficiency Plan stated, 'The greatest energy saving potential lies in buildings.' The Plan further states: 'A large energy saving potential remains untapped. Techniques exist to cut existing buildings' consumption by half or three quarters.'

In 2010, the recast of the Energy Performance of Buildings Directive (EPBD) introduced the concept of and obligation for nearly zero energy buildings, particularly for new buildings and a target to meet that obligation by 2020 (for all buildings).⁵ By 2020, the EPBD also requires a 20 per cent reduction in carbon emissions from the built environment and that 20 per cent of energy generated must be from renewal sources.⁵

Competitiveness

Europe is concerned about its economic competitiveness, exacerbated by foreign competitors who appear to gain advantage by exploiting energy supplies using production methods that many consider to be harmful to the environment. Of particular note is the competitive price of natural gas in the United States, primarily as a result of the exploitation of shale gas. The US has taken an energy supply-side approach, benefiting from the low

cost and abundant availability of domestic natural gas from shale deposits. However, Europe has adopted a different approach because the supply-side options are significantly different and other related considerations, such as the resistance to the extraction of shale gas. Therefore, greater energy efficiency (the demand-side approach) is expected to provide benefits for Europe, especially in the longer term.

Future policy trajectory

The European Commission believes that developing a 2030 framework for EU climate change and energy policies is necessary to provide certainty and reduced regulatory risk for investors and to mobilise the funding needed; to support progress towards a competitive economy and a secure energy system; and to establish the EU's 2030 ambition level for greenhouse gas (GHG) reductions in view of a new international agreement on climate change foreseen for 2015. Ultimately, the move towards a competitive low carbon economy will continue and making our buildings more energy efficient will play a key role in that transition.

UK CONTEXT

Energy security

Energy security is a significant issue for the government because of the UK's increasing reliance on imported energy, which as a percentage of production, has risen from less than 5 per cent in 2004 to 35 per cent by 2012.⁶ This trend will continue for years to come for several reasons.

First, a recent report by the Global Sustainability Institute noted that Britain has just 5.2 years of oil, 4.5 years of coal and 3 years of its own gas remaining.⁷ Second, the closure of a number of older power stations in the UK is an immediate cause of the change in risk as there is a reduction in thermal power generation. A recent British Council for Offices (BCO) report, 'Britain's

Energy Gap',⁸ noted that the risk of brown outs and blackouts increases significantly as older power stations are decommissioned. It states: 'The effect of changing the generation mix is to reduce the de-rated marginal capacity: the electrical generation capacity of the system, de-rated to reflect the availability of plant, less the peak electricity demand. This margin is forecast to decline from in excess of 15% to below 4% by 2015–2016.' Ofgem has forecasted that by 2015–16, there is a one in four probability of a blackout.⁹

Energy efficiency and carbon emissions reduction

The Department for Communities and Local Government (DCLG) estimated that in 2009 buildings accounted for about 43 per cent of all the UK's carbon emissions.¹⁰ Further, the Greater London Authority estimates that 80 per cent of buildings that are around today will exist in 2050, reinforcing the significance that improving the energy efficiency of our buildings plays in reducing carbon emissions.¹¹

The UK has responded to the EU directives in a number of ways. In 2008, the Climate Change Act set the world's first legally binding commitment to reduce carbon emissions: by 80 per cent by 2050 (when compared to 1990 levels).¹² Furthermore, the Fourth Carbon Budget sets an interim target of a 50 per cent reduction in carbon emissions by 2025 (compared to 1990 levels).¹²

The Carbon Reduction Commitment Energy Efficiency Scheme (known as the CRC Scheme) is designed to improve energy efficiency and cut emissions in large public and private sector organisations. The CRC affects large public and private sector organisations across the UK, together believed to be responsible for around 10 per cent of the UK's greenhouse gas emissions. Participants include supermarkets, water companies, banks, local authorities and all central government departments. The scheme tackles emissions not already covered by Climate Change Agreements and the EU Emissions

Trading System. It features a range of drivers to encourage organisations to develop energy management strategies that promote a better understanding of energy usage. Organisations that meet the qualification criteria are required to participate, and must buy allowances for every tonne of carbon they emit.

Part L of the Building Regulations is of particular note with the government tightening energy efficiency standards as we move closer towards nearly zero energy/zero carbon buildings. This can be seen in recent changes to Part L in October 2010 and April 2014. The revision in October 2010 resulted in an increase of 20 per cent in the carbon emission reduction requirement. Also of note is the government's commitment to deliver zero carbon domestic buildings by 2016 and remaining buildings by 2019 (tying in with the EU's requirement for all new buildings to be nearly zero energy by 2020); the mechanism for delivery being Part L of the Building Regulations.

The government has also recently introduced the Energy Savings Opportunity Scheme (ESOS).¹³ ESOS requires UK companies with more than 250 employees or an annual turnover in excess of €50 million and balance sheet assets exceeding €43 million to assess the energy use and potential for energy reduction of their organisation. ESOS is the UK government's interpretation of Article 8 of the EED, which requires energy audits and energy management systems to be put in place for large organisations.

The UK government also drives the delivery of more energy efficient buildings through the planning system and associated policies. The National Planning Policy Framework requires that local planning authorities ensure that new developments are energy efficient and will require all new homes to be zero carbon from 2016 and to include all other buildings from 2019. Local authorities typically implement these policies through the conditions attached to planning consents.

Energy performance certificates

DCLG introduced Energy Performance Certificates (EPCs) in 2008 to meet the standards required by the EU's Energy Performance of Buildings Directive. An EPC is a simple measure of a building's energy efficiency calculated using standard methods and assumptions about energy usage. This means that the energy efficiency of one building can easily be compared with another building of the same type. This allows prospective buyers, tenants, owners, occupiers and purchasers to see information on the energy efficiency and carbon emissions from their building so that they can consider energy efficiency and fuel costs as part of their investment.

An EPC must be provided whenever a property is constructed, leased or sold. An accredited assessor must prepare the EPC and for it to be valid it must be lodged on a public register. Once lodged, a certificate is valid for ten years, unless certain works or alterations are undertaken (such as installing air conditioning) that require re-certification of the property.

The EPC looks broadly similar to the energy labels now provided with vehicles and household appliances. The certificate will provide an energy rating of a building from A to G, where A is very efficient and G is least efficient. An EPC includes a recommendation report that lists cost-effective and other measures to improve the building's energy rating.

The quality and credibility of EPCs can vary. Timing is arguably the most critical factor when evaluating an EPC. Identifying when it was produced is helpful when assessing the likely quality as certificates produced shortly after the legislation came into full effect (from 1st October, 2008) are generally thought to be less reliable than EPCs post-April 2011 that were often reliant on default settings. Producing an accurate energy model using dynamic simulation modelling (DSM) can result in an improved rating. In addition, each time Part L is revised the National

Calculation Methodology (NCM) for EPCs is updated to reflect the increased carbon reduction targets. This means that property with an E rating prepared before April 2011 would now have an EPC of an F or even a G.

ENERGY ACT 2011

The Energy Act has three principal objectives:¹⁴ to tackle barriers to investment in energy efficiency; to improve energy security; and to enable investment in low-carbon energy supplies.

Minimum energy efficiency standards

Of particular note is the requirement to introduce regulations to improve the energy performance of domestic and non-domestic buildings in private rented sectors in England and Wales by no later than 1st April, 2018. If a property in the private rented sector is captured by the regulations, the landlord will need to carry out improvements to meet a specified minimum energy efficiency standard (MEES). The proposal means that landlords will be unable to let eligible properties, unless they meet the specified minimum standard. To ease the financial burden of complying, the government has made a commitment that landlords will not have to incur net upfront costs in doing so.

The Department of Energy and Climate Change (DECC) proposes that MEES regulations will apply to domestic and non-domestic private rented properties that do not meet the minimum standard of an E EPC rating. The domestic MEES regulations¹⁵ will apply to all properties that are occupied by a tenant either under an assured tenancy under the Housing Act 1988 or a regulated tenancy under the Rent Act 1977. Non-domestic properties¹⁶ will be within the scope of the MEES regulations if they are let under a tenancy regardless of its length. DECC estimates that this will affect one in five properties. However, a recent study of non-domestic properties by WSP found that

when EPCs are updated to take into account changes to the calculation methodology (as detailed above) the number of properties affected increases to one in three.¹⁷

The government proposes that landlords of properties with an EPC rating of F or G will be unable to let their properties unless they have undertaken all energy efficiency improvements that would meet the Green Deal Golden Rule. The Golden Rule is that repayments under the Green Deal for any improvements must be the same or less than the expected energy bill savings (in the first year). In order to ascertain what improvements will fall within the Green Deal Golden Rule a landlord of an F or G rated property will have to obtain a Green Deal Assessment. The government is considering the simplification of the assessment process with one possibility being that the landlord could simply be obliged to carry out all energy efficiency improvements that are ‘technically, functionally and economically feasible’ and have a prescribed payback period of, say, 15 years. Another possibility is that a landlord could be obliged to carry out the improvements set out in the EPC Recommendations Report and this would remove the need for separate Green Deal Assessments or other feasibility reports.

Exemptions

The government is considering various exemptions. Exemptions include where the required energy efficiency improvements will result in a material devaluation of the property of 5 per cent or possibly, 10 per cent. Other proposed exemptions include where a landlord has been unable to obtain a required consent from a third party to implement the eligible energy efficiency improvements that would include planning permission.

Commencement of regulations

It is proposed that there will be ‘soft start’, which means that the regulations will only apply to new leases granted to new tenants on or after 1st April, 2018. It is also proposed

that renewal of leases under the Landlord and Tenant Act 1954 will be treated as new leases. However, there will be a requirement that all non-domestic private rented properties will have to be compliant by 1st April, 2023 and all domestic private rented properties compliant by 1st April, 2020.

Non-compliance

The government proposes that Trading Standards Officers within local authorities are likely to be the enforcement officers for the regulations and that the penalty for non-compliance should be such that it motivates landlords to comply. In the case of domestic properties it is proposed that the penalty be equal to the rent for the property for the period of non-compliance. For non-domestic leases rent-free periods could complicate the calculation of a penalty and therefore, an alternative formula is proposed using a percentage of the rateable value of the property.

One of the challenges for landlords as well as for enforcement officers will be to determine whether or not a property is or is not compliant with the regulations. Landlords will want certainty that their properties are compliant and this may be difficult to establish where, for instance, an exemption applies. The government is therefore exploring whether exemptions could be certified by a third party so that there will be no residual risk of any enforcement action.

Case study

Research by independent property and construction consultancy Tuffin Ferraby Taylor (TFT) conducted in December 2013 on domestic and non-domestic existing properties in central London, found that 30 per cent had an F or G rating and, therefore, would be captured by the proposed minimum energy efficiency regulations.

Significantly, the figure halved when TFT input accurate, up-to-date data. The findings suggest that two things — when a building

was last certified and the quality of the data input at the time — can have a detrimental effect on the EPC rating.

TFT explored ways of improving the EPCs to mitigate the potential risk of these properties being unlettable from 1st April, 2018. TFT's study demonstrated that the installation of LED lighting and motion/daylight controls alone improved the EPC rating in the commercial properties from F or G to C in 90 per cent of cases. TFT also found that improving thermal performance of the fabric of domestic properties improved the EPC ratings to Cs.

Further, when undertaken as part of cyclical repairs and refurbishment, the additional capital cost of installing LEDs (over previous incandescent lighting) and upgrading insulation levels was negligible. For the tenant, the plus side of a better EPC-rated property is reduced energy bills, and in the case of LEDs, the longer service life of the fittings means lower maintenance costs. The upside for the landlord is a marketable property.

MARKET DRIVERS

Compliance with legislation is a significant driver for property owners, investors and occupiers. However, uncertainty surrounding future government policy and legislation undermines confidence when making decisions to invest in energy efficiency improvements with longer payback periods. Although there may be uncertainty in the short term, the longer-term targets remain unchanged, such as the Climate Change Act and the UK's recent commitment in its Fourth Carbon Budget to reduce carbon emissions by 50 per cent by 2025.

When leading investors and property companies undertake development or complete comprehensive refurbishment works it is essential that the completed building has a number of green labels for it to be market-facing. This suggests an underlying value differentiator in green-labelled and more

energy efficient properties. However, so far there is a lack of reliable data to objectively demonstrate that these 'greener', more energy efficient buildings command a higher value or rent. There is also a view that poorer performing properties could in future be subject to a brown discount. RICS acknowledges that valuers should be aware of sustainability features and the implications that these could have on property value in the short, medium and longer term.

When TFT provides due diligence advice, increasingly its investment clients are paying closer attention to the sustainability of the property, especially its energy performance. Clients want to understand what expenditure will be necessary over the life of the investment to meet emerging market demand for more sustainable buildings and to comply with the legislation. The costs provided are then factored into the investment appraisal to determine what affect they may have on investment returns during the hold period and on disposal.

Anecdotally, there are also signs in the marketplace that investors are unwilling to invest in commercial properties with an EPC lower than a D rating or if they are, capital expenditure that is necessary to improve the property to a D is factored into their investment appraisals. However, given the potential for inaccuracies in EPCs (as highlighted earlier) this simplistic approach can be misguided and prospective purchasers can miss out on potential opportunities. The Energy Act and the prospect of minimum energy efficiency standards have helped to increase awareness of energy performance such that investors are cautious when evaluating prospective purchases of poorer performing properties. Furthermore, in certain locations, for poorer performing properties there could be an opportunity to negotiate a reduction in the purchase price.

FTSE 100-listed real estate investment trust, British Land, responsible for approximately £18 billion of property, recognises

the benefits of sustainability and believes that 'occupiers and people who work, live and shop in our properties prefer sustainable, efficient buildings, which enhance wellbeing and productivity, and are more cost effective to run'.¹⁸

Interestingly, the Department of Energy and Climate Change found in a study of more than 300,000 residential property transactions that dwellings rated EPC F and E sold for approximately 6 per cent more; dwellings rated D sold for 8 per cent more; dwellings rated EPC band C for 10 per cent; and A/ B sold for 14 per cent more than the G-rated dwellings.¹⁹

From a corporate perspective CEOs are increasingly aligning sustainability with overall business goals. In the United Nations Compact's Global Corporate Sustainability report 63 per cent of the respondents align their core business strategy to advance their sustainability goals. A survey by McKinsey²⁰ found that energy saving is the most popular core sustainability activity (64 per cent) and therefore, it reasonable to expect that occupiers to select properties that are energy efficient.

CONCLUSIONS

The EU believes that if energy demand is not reduced, diminishing energy supplies and increased reliance on costly and unpredictable imported supplies will mean Europe has a competitive disadvantage when compared to competing countries, especially the United States with its abundance of shale gas. It is estimated that there are between 3 and 5 years of native supplies left in the UK and therefore, energy security is a significant concern.

With the property sector accounting for approximately 45 per cent of carbon emissions it is essential that buildings become more energy efficient to meet the long-term targets to cut emissions. Furthermore, given that the majority of buildings around today

will exist in 2050, improving our existing built stock is of critical importance.

There is a plethora of legislation and policies in the UK that tackle energy security, energy efficiency and reducing carbon emissions. Of note is Part L of the Building Regulations and the Energy Act, which should help to improve the energy efficiency of the built environment.

The UK government also drives the delivery of more energy efficient buildings through the local planning authorities, such that if an applicant wants to unlock value from a site it must meet energy performance requirements that are tightening as the prospect of zero carbon buildings becomes a realistic proposition.

Green labels, especially EPCs, improve transparency and enable prospective tenants and purchasers to make decisions based on the energy performance of properties. Increasingly corporate occupiers are aligning their sustainability objectives when making property decisions.

Providing energy efficient properties is becoming a market imperative with emerging evidence that owners, investors and occupiers are becoming increasingly aware of the sustainability profile of their properties and recognising that it can be a differentiator. Improving the energy performance of buildings does not necessarily result in additional expenditure and it is often possible to implement improvements as part of cyclical maintenance and refurbishment works.

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