IPF Research Programme 2006-2009

The Energy Performance of Buildings Directive and Commercial Property Investment: A Situation Review




Research Findings

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September 2007

This research was commissioned by the IPF Research Programme 2006 - 2009

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This research was funded and commissioned through the IPF Research Programme 2006-2009.

This programme supports the IPF's wider goals of enhancing the knowledge, understanding and efficiency of property as an investment class. The initiative provides the UK property investment market with the ability to deliver substantial, objective, and high quality analysis on a structured basis. It will enable the whole industry to engage with other financial markets, the wider business community and government on a range of complementary issues.

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THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE AND COMMERCIAL PROPERTY INVESTMENT: A SITUATION REVIEW

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THE ENERGY PERFORMANCE OF BUILDINGS DIRECTIVE AND COMMERCIAL PROPERTY INVESTMENT: A SITUATION REVIEW

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EXECUTIVE SUMMARY

This report was commissioned by the Investment Property Forum in November 2006 to provide a situation review about the status of the energy certification component of the EU Directive on the Energy Performance of Buildings (EPBD). The report also examines potential implications for UK commercial property investors, at a time when there had been considerable delay in terms of the implementation of the EPBD into UK law.

The central aims and objectives of the review were to address the following points:

- why Energy Performance Certificates were perceived as necessary;
- what the intentions of governmental policy were;
- the legislative background in this area; and,
- to compare implementation in various EU countries.

In terms of the background to this Directive, European and UK energy policy has for some time, most notably since the Kyoto Protocol was first negotiated in 1997, been seeking to reduce carbon emissions by various means, including increasing the efficiency of energy use. Because the UK commercial property sector is a major consumer of energy (about 14% total consumption), and is a substantial contributor to carbon emissions (also about 14%), the government is seeking to increase its efficiency of energy use. Indeed, energy consumption in the UK private commercial sector has grown substantially over the last 30 years, driven by complex changes and dynamic relationships between output in the economy (measured as the sector's contribution to the UK economy), floor area, changing levels of employment and technological innovation.

The research identifies that barriers have frequently prevented the introduction of energy efficiency measures. These include the investment costs of new technology; market failures from 'split incentives' (ie the landlord – tenant split where tenants pay energy bills but landlords control the properties), and organisational inconsistencies. One of the key objectives behind the implementation of the EPBD is to improve the energy efficiency of commercial property by developing a more transparent system of energy certification for buildings.

Despite the EPBD being a key element of the government's drive to reduce carbon emissions, this research identified from the available literature and a limited number of interviews that there is still some confusion and uncertainty amongst key stakeholders over the EPBD in the UK property investment community. This is potentially worrying given analysis commissioned by the Department of Communities and Local Government (DCLG) which suggests that the EPBD is likely to potentially impact on a significant number of UK commercial properties over the next two to three years (ie 150,000 Energy Performance Certificates will be required each year from 2008 to 2012). Furthermore, DCLG analysis also suggests that the overall costs of implementation of EPCs (both direct and indirect) for all non-residential property (excluding public property), and (both direct and indirect) for all commercial property (excluding public buildings) is calculated to be £1,148 mn over the period 2008 to 2020. In 2008, there are initial costs of £148m relating to EPCs, of which some 75% (£102m) relates to the main commercial property sectors in the same year. In crude terms this might represent in excess of 2.5% of annual property development and improvement investment expenditure in the UK. The key benefits are seen as being in carbon savings, with some 4m tonnes of carbon saved for all non-domestic stock (excluding public buildings). Although there is an overall net cost, this is considered to be 'value for money' by DCLG because of the resultant carbon savings.

EXECUTIVE SUMMARY

Given the potential scale of the implications to the property investment community, the research identifies that major concerns (and therefore risks) in the short term for UK property investors are likely to include the following, which are identified and discussed within the report:

- Costs of survey(s).
- Procedural difficulties and uncertainties.
- Shortage of assessors.

Other key findings include that there is continued debate over the landlord-tenant 'split incentive' and whether 'green', energy efficient buildings really will let for higher rental values in the marketplace in comparison to less sustainable buildings, or indeed whether less sustainable buildings will fail to command 'top' market rents.

Further research will be needed to address the value impacts of the EPBD. In the short term, it is recommended that evidence is sought from jurisdictions where certification already exists (as per Appendix 4). In the longer term, evidence from the UK will become available and useful in terms of analysing value impact.

CONTENTS

1. BACKGROUND AND CONTEXT

This situation review was commissioned in November 2006 against a background of various policy statements on EPBD and a lengthy period of delay over its implementation into UK law. The chief aims of the commission were to investigate and set out the following:

- why Energy Performance Certificates (EPCs) were perceived as necessary;
- what the intentions of governmental policy were;
- the legislative background in this area;
- to compare implementation in various EU countries.

The related objectives of the research were to:

- Provide a summary of the findings of the situation review and of the findings of relevant, ongoing research.
- Ascertain whether there are gaps in the knowledge that could usefully be addressed by future research.
- Provide opinion-based scenarios as to the future direction of policy in this area.
- Scope out the potential implications for investment value impact based on literature and interviews.

During the research period, the government released Regulations which sought to implement the EPBD (see 2.2 below and after) and therefore the research authors were encouraged by the IPF to add another dimension to the work (ie to reflect on the actuality of the regulatory situation).

In terms of methodology, the research team undertook literature and policy reviews and a limited number of interviews. Seven technical experts (ie energy consultants and building services engineers) from within private practice and the public sector and five members of the commercial property investment community were interviewed. In addition the main consultants on the DCLG Regulatory Impact Assessment (Faber Maunsell) were also contacted and provided valuable information on their analysis of regulatory impact.

This resulting research report is structured as follows:

- Section 1 – Examines the background and context to the EU Energy Performance of Buildings Directive (EPBD)
- Section 2 – Examines the main findings from the literature review, policy analysis and interview findings and provides conclusions to the research.

The aim is therefore to provide a 'situation review' of the EPBD and to highlight areas of specific importance within the Directive for the UK property investment community.

The current section therefore highlights the importance of energy use and carbon emissions in the commercial service sector of the UK economy, which includes offices and retail. The drivers and barriers to energy efficiency are explored, and the impact of EU legislation (including the European Union Energy Performance of Buildings Directive, EPBD) is examined.

1.1 Energy use and carbon emissions

Since the UK Government revealed its intentions in 2003 to cut carbon dioxide by 60% by 2050, a raft of new policies and legislation has emerged relating to environmental performance and sustainability in the built environment. The introduction of this new legislation and the corresponding focus of these issues in the media have forced the issue onto the agenda of many businesses in recent years. Also, given that between 40% and 50% of

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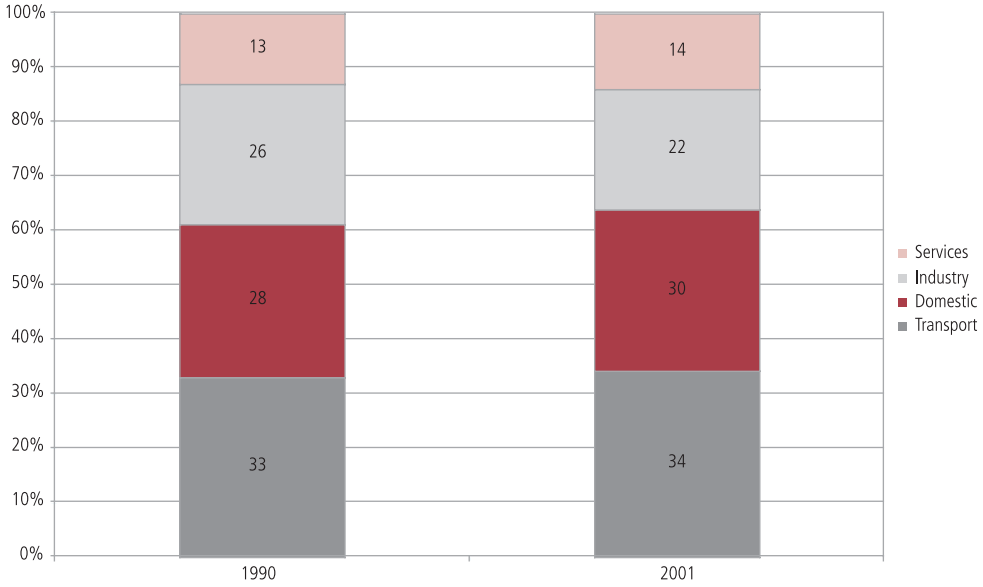
the UK's carbon emissions come from the construction, use and management of buildings, energy is now one of the most discussed environmental issues in the property sector.

Historically, energy efficiency policies and programmes in the UK have focused on the domestic and industrial sectors, but have tended to overlook the service sector (including offices and retail) (Wade et al, 2003). However, over the last five years there has been an increasing focus on the sector, culminating in the required implementation of the European Union Energy Performance of Buildings Directive (EPBD).

The growing focus on energy efficiency has been driven by the knowledge that the rate of growth of energy consumption in the UK service sector since the 1970s has been approximately three times greater than in all other sectors of the UK economy except transport (Scrase, 2001). During the 1990s the rate of increase slowed, with the sector consuming about 14% of total energy in the UK in 2001 (DTI, 2002) (Figure 1).

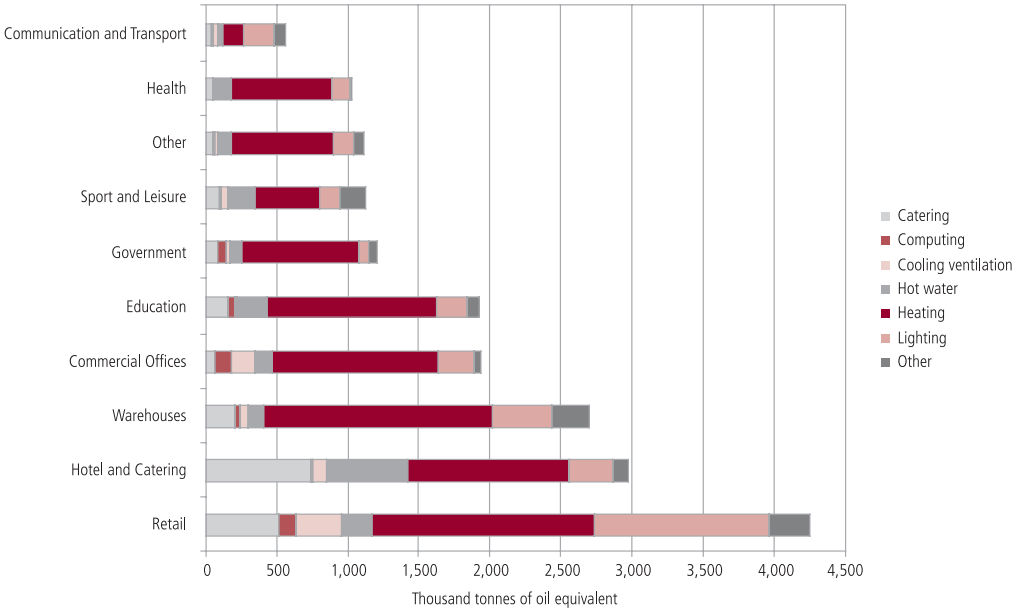
Figure 1: Percentage sector shares in total UK energy consumption, 1990 and 2001 (source: DTI, 2002)



The service sector, excluding agriculture, can be split into two main sectors: 'public administration' and 'private commercial' (covering retail, hotels, financial, real estate and computer activities). Energy consumption in the private commercial sector increased by 59% between 1970 and 2001, and energy consumption in the public sector fell by 7% (DTI, 2002). However, 'energy intensity' (or carbon emissions per unit of Gross Domestic Product) in the private commercial sector has shown an improvement, as energy savings have worked through the system (DTI, 2002). This is because output has risen at a significantly faster rate than energy consumption. Indeed, most of the fall in intensity is likely to be due to higher efficiency, although structural change within the sector has also brought about some reduction in energy use (DTI, 2006).

As Figure 2 shows, the largest energy-consuming UK sub-sectors within the private commercial sector are retail, hotels and warehouses. Commercial offices comprise about 10% of energy use in this sector. Analysis of official statistics also reveals that space heating is a major component of energy consumption in the key private commercial sub-sectors (Figure 2), although energy consumption in the retail sector is strongly driven by lighting.

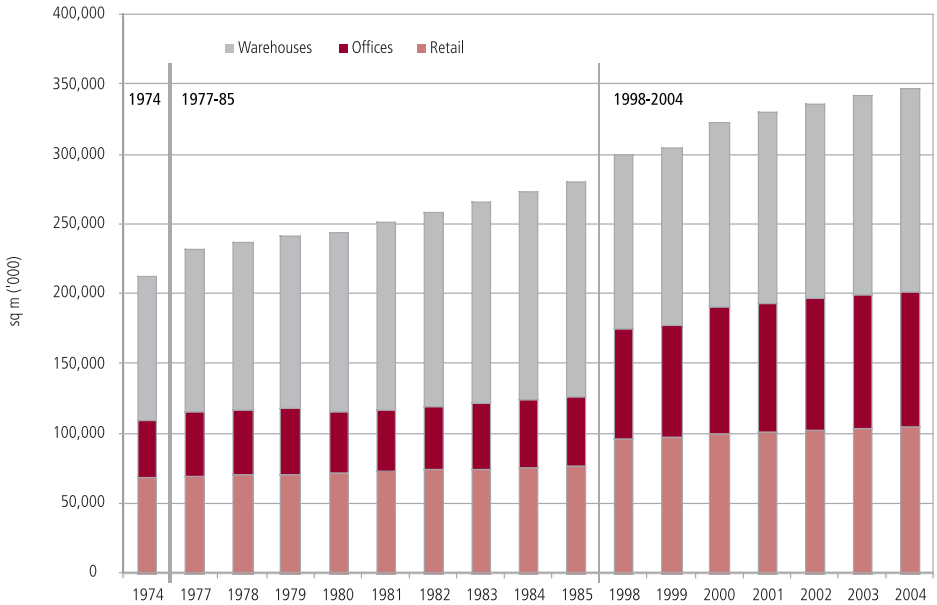
Figure 2: Energy consumption for UK service sector buildings by end use, 2005 (source: DTI)



The increase in consumption in the sector has primarily been driven by changes in output in the economy (measured as the sector's contribution to the UK economy), increased floor area (Figure 3), changing levels of employment and technological innovation (Scrase, 2001; DTI, 2002; DCLG, 2007).

The commercial service sector is therefore a major consumer of energy and also an important source of carbon emissions. In terms of emissions, domestic buildings are responsible for about 26% with non-domestic buildings, 13.5%. However, if the energy used in constructing, occupying and operating buildings is combined then all buildings are responsible for 50% of carbon emissions in the UK (BRE, 2003 and Sustainable Buildings Task Group, 2004).

Figure 3: Changes in commercial property stock (England) (source: DCLG, 2007)



1.2 Barriers and drivers

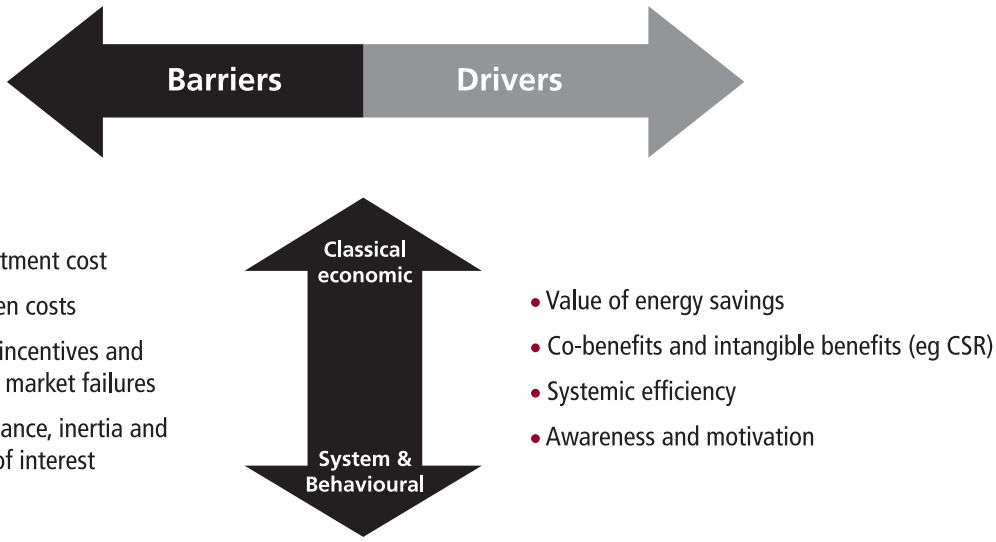
Analysis by the Carbon Trust (HM Treasury, 2005) has already suggested that there are many barriers to the uptake of greater energy efficiency measures by the public and business sectors. These fall into four main groups (see Figure 4) which include:

- Investment costs of new technology set against energy savings.
- Hidden costs from adopting more efficient energy equipment.
- Market failures from 'split incentives' (ie the landlord – tenant split where tenants pay energy bills but landlords control the properties).
- Organisational inconsistencies, where there is a misalignment of return within an organisation when differing parts of an organisation may place different values on different rates of return. This may derive from managerial inertia or key decision-makers lacking interest or motivation to improve energy efficiency. (HM Treasury, 2005)

These need to be set against the key drivers of company decision-making: increased value, Corporate Social Responsibility (CSR) benefits, systemic efficiency and awareness and motivation.

Another important barrier which is not highlighted in Figure 4 is the relatively small proportion of total costs that energy represents for a commercial organisation (about 1-6%) (see Mayor of London, 2007). This therefore creates a reduced incentive for change and is often exacerbated by energy use estimates rather than meter readings or 'bundling' of costs.

Figure 4: Barriers and drivers for energy efficiency uptake (HM Treasury, 2005)



Despite the barriers it is clear that commercial property use and energy consumption and efficiency issues are inseparable. For example, many see energy as currently the most important environmental issue in property investment (Gensler, 2006). The main reasons for this are concerns over ever-increasing energy costs and security of energy supplies. However, as the Mayor of London's report on climate change (Mayor of London, 2007) pointed out, there is a significant opportunity to reduce CO2 emissions in the commercial and public sectors.

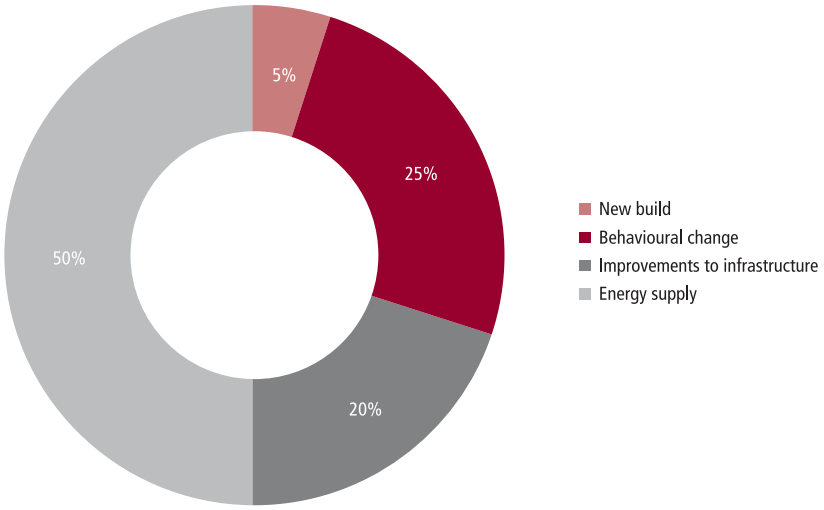
Key measures (which have been quantified for the sector in London (see Figure 5) include:

- Driving behavioural change by, for example, ensuring power-saving responsibility from employees.
- Improving the energy efficiency of the existing stock through physical upgrades (ie through the building fabric or through improved operating systems).
- Decreasing the carbon intensity of energy supply through the increased use of renewables.
- Capturing carbon reductions through improved efficiency on new build.

Furthermore property investors and their advisors need to be aware of an increasing raft of legislation relating to energy and property, such as that contained in the following law and policy statements:

- The Energy White Paper 2007
- The Climate Change and Sustainable Energy Act 2006 (Commencement) Order 2007
- The Energy-Saving Items Regulations 2007
- The Energy Act 2004 (Commencement No. 8) Order 2007
- EC Communication Limiting Global Climate Change to 2° Celsius: The way ahead for 2020 and beyond 2007
- EU Directive on Energy End-use Efficiency and Energy Services 2006
- EU Energy Green Paper 2006
- EU Energy Efficiency Action Plan 2006

Figure 5: Sources of savings in the commercial and public sectors (proportion of overall reduction in carbon emissions in London by 2025) (source: adapted from Mayor of London, 2007).



1.3 EU legislation relating to energy and property

The European Community has set in progress a programme to address climate change and to achieve its Kyoto commitment of an 8% reduction in CO2 emissions over 1990 levels by the 2008–2012 reporting period. This target has been distributed amongst the Member States; the target for the UK is 12.5%. However, the UK Government has set its own domestic target of a 20% reduction by 2010, with a further reduction needed by 2020.

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King Sturge (2007) identified the three most important pieces of environment legislation to be have been implemented in the UK in the last decade as:

- The Waste, Electrical and Electronic Equipment Directive which aims to increase the re-use, re-cycling and recovery of this kind of waste. It is complemented by another 2003 Directive on the Restriction of the use of certain Hazardous Substances (RoHS) which are often contained in the equipment and may end up leaking into local water supplies when dumped in landfills;
- The Environmental Liability Directive – this attempts to prevent environmental damage by forcing industrial polluters (operators) to pay prevention and remediation costs; and,
- The Energy Performance of Buildings Directive (EPBD) which aims to improve the energy efficiency of residential and commercial buildings and subsequently reduce carbon dioxide emissions. According to CIBSE (2003) the EPBD will increase awareness of energy use in buildings, and is intended to lead to substantial increases in investments in energy efficiency measures within these buildings.

This report now focuses on the EPBD. The next section reviews the research findings, which are based on the interviews and associated previous research and literature carried out for the situation review of the EPBD (see Appendix 1 for a list of useful websites relating to EPBD).

2. RESEARCH FINDINGS

2.1 Introduction

The current report focuses on the EPBD and the accompanying EPCs, and more specifically their implementation and potential impact on the UK property market[1]. In undertaking this 'situation review' 12 interviews were undertaken with experts from the fields of property investment and building engineering. These interviews were undertaken with a view to explaining the following:

1. Current knowledge of EPCs in sector;
2. Potential market impact of EPCs;
3. Practical implementation of EPCs; and,
4. Perceived implications for investment value and leasing behaviour.

The sample in the property investment group consisted of those directly involved with commercial property investment in the UK, either through research or fund management. The building engineering sample consists of those who have been directly involved in the technical aspects of the inception, planning or planned implementation of the EPBD. Interviews were undertaken by telephone between 1 March and 9 March 2007. For further details see Appendix 2.

After briefly describing the current status of the EPBD and EPCs, this section of the report discusses the main findings from this research (based on the interviews and previous research and literature where relevant).

2.2 Progress towards implementation of the EPBD

Ellison and Keeping (2007) identify that there are four key provisions in the Directive for investors:

- Energy Performance Certificates (EPCs);
- Display Energy Certificates;
- Air Conditioning Assessment; and
- Who will assess and certify energy performance.

ACE (2005) suggested that progress towards implementation of the EPBD and EPCs had been, to date, very confused and too slow. Further to this, it was considered that the process of EPBD implementation was marred by a lack of co-ordination within Government. However, despite several missed deadlines, on the 29 March 2007, the UK government laid before Parliament the Regulations necessary to implement the 2003 EU Energy Performance of Buildings Directive (EPBD). These Regulations have been long awaited and after significant consultation, more is now known about how and when the Directive will be implemented. The proposed timetable for EPBD implementation is shown in Table 1.

[1] A synopsis of the wider implications of the EPBD as it currently applies to the UK is available from the IPF website: http://www.ipf.org.uk/resources/pdf/research/EPBRegs%20web%20summary%2026%20april.pdf

Table 1: Proposed implementation timetable

Date	Element to come into force
19 April 2007	Establishment in law of necessary enabling activities – National Calculation Methodology, certificate design, qualification and accreditation regime etc.
6 April 2008	EPCs for sale or rental of non-residential > 500 m^2 EPCs for construction for all non-residential DECs for all public buildings >1,000 m^2
1 October 2008	EPCs for sale or rental of all remaining non-residential
4 January 2009	First inspection of all existing air conditioning systems > 250 kW†
4 January 2011	First inspection of all existing air conditioning systems> 12 kW†

Progress of other EU countries in implementing the EPBD has been documented in several reports, the most recent being undertaken by IMPACT in 2006[2]. Appendix 4 of this report sets out recent progress in energy certification in various European countries.

2.3 Energy Performance Certificates

The original purpose of EPCs was seen as being two-fold:

- to contribute towards reducing emissions from the built environment and its users.
- to create more cohesion between member states by standardising property products in the market so that investors and occupiers can consider properties across Europe on an equal footing.

The regulations published on 29 March 2007 provide details of the EPBD and EPCs[3]. EPCs will be required when a new building is to be built or an existing building is to be sold or let, and responsibility for provision of the EPC will rest with:

- The contractor providing it to the owner of a new build property.
- The seller making it available to any prospective purchaser.
- The prospective landlord making it available to a prospective occupier. The EPC should be provided, on request, to any prospective tenant, and should in any case be provided by the landlord to the successful tenant before a contract for tenancy is made. There is no need to obtain an EPC for an existing tenancy, and once obtained an EPC remains valid for up to 10 years. If a valid EPC still exists when changing tenants no new EPC is required.

Two types of energy certificate are being developed for commercial buildings with distinctly different purposes; the Energy Performance Certificate (EPC) and the Display Energy Certificate (DEC).

The EPC (Figure 6) will contain an asset rating and will measure and report on the intrinsic performance potential of the building. It will rely on data from a site survey to establish energy performance, rather than the use of metered energy consumption data, which is more influenced by the occupants' behaviour and the way in which the building is used (eg hours of occupancy, equipment installed). The EPC will be produced using a standardised energy performance computer model based on a national calculation methodology. The energy model will produce a grading (based on the CO^2 emissions per m^2 of floor area) on an A-G scale related to energy performance

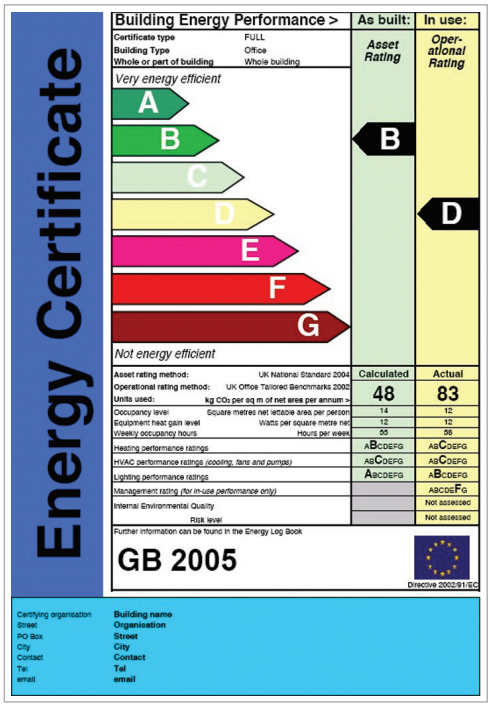
† Regime of air conditioning inspections required to be established by Jan 2009 – inspections expected to commence from Jan 2008 as increased numbers of accredited inspectors become available

[2] Report available at http://www.senternovem.nl/mmfiles/WP3%20Cross%20country%20evaluation%20report%20d34%20final_tcm24-209361.pdf

[3] For further details see the DCLG website at: http://www.communities.gov.uk/index.asp?id=1504720

standards required by the 2006 Building Regulations. The EPC will be valid for up to 10 years. The government's EPC cost estimates range from £250-£500 for small premises to £2,000 for larger premises. The EPC assessment must be accompanied by recommendations of cost-effective ways in which energy performance could be improved.

Figure 6: A typical EPC for an office building (source: www.epalabel.org)



Display Energy Certificates will only apply to buildings:

'with a total useful floor area over 1,000m² where the occupier is a public authority or an institution which provides public services to a large number of persons and is frequently visited by members of the public'

The DEC will contain both the asset rating and an operational rating giving the CO^2 emission per m^2 of floor area of the building in use. DECs show the actual energy usage of a building and are based on the energy consumption of the building as recorded by gas, electricity and other meters. This can then be used to compare different buildings' energy usage. Ratings will have to be calculated annually, will have to include the previous two annual ratings for comparative purposes, and also be easily visible to members of the public. These will enable the public to see the energy efficiency of a building. Occupiers must also be in possession of an Advisory Report which will contain recommendations for improving the energy performance of the building, and is produced as a result of recommendations from the EPC. DEC reports must be updated at least every seven years.

Enforcement of the Regulations will rest with local authorities – ie Building Control departments for new build properties and Trading Standards Officers in other instances. Financial sanctions for non-compliance with the Regulations will be at 12.5% of the rateable value of the property, subject to a minimum of £500 and a maximum of £5,000 (Ellison and Keeping, 2007). The regulations are silent on whether a continuous breach may incur repeat fines. They do, however, allow for the enforcing authority to charge unpaid fines as a debt – presumably as a deterrent against continuous breaches.

The key differences between the two certificates are shown in Table 2.

Table 2: Asset rating and operational rating compared

	Asset rating	Operational rating
Measured energy/modelled energy	Modelled using SBEM[4]	Measured using real data
Responsibility for certification	Owner	Occupier
Validity period	10 years	7 years
Rating system	A-G rated efficiency	A-G rated efficiency
Requirements for display	No requirement but must be produced on sale or rent	Must be on public display
Enforcement	Building Control	Building Control

[4] SBEM is a computer program that provides an analysis of a building's energy consumption. SBEM calculates monthly energy use and carbon dioxide emissions of a building given a description of the building geometry, construction, use and HVAC and lighting equipment. See http://www.ncm.bre.co.uk/

2.4 Current perception of EPCs

Research interviewees were asked about their current perceptions of EPCs. In their responses, the majority focused on the contribution of EPCs towards tackling climate change and the environmental benefits of reducing emissions; for example the opportunity to tackle emissions from new buildings and existing buildings which are bought or sold and raising the profile of environmental issues amongst occupiers.

However, the perception of current knowledge of EPCs in the sector was considered universally poor. One interviewee said:

'Nobody seems to be concerned. At a recent event, I asked a CEO of a big property company 'Do you think Energy Performance Certificates are going to affect investment values?' and he didn't know what they were. He said 'I don't know what you're talking about.' (Interviewee 4).

Although there is a plethora of information available on sustainability and environmental issues, EPCs are considered to have made an impact only at the more technical end of the industry, and with those who will be directly involved with their implementation. Interviewees felt that, although fund managers know vaguely what it is about, the reality of the situation (ie the implications), have still not hit home. The EPBD is probably the first 'real' environmental/sustainability orientated measure to affect the property market as opposed to the more technical, construction sector. As one interviewee suggested:

'There is an awareness of energy performance measurement; it is coming, but we haven't done anything about it yet' (Interviewee 3).

Several other interviewees highlighted that occupiers and investors currently view EPCs as they do any other matter falling within the sustainability agenda; that is, *'it is not going to affect property that much anyway, so I don't have to worry about it at the moment'*. Interviewees also felt that in the short term, the decision whether or not to invest or occupy a particular property would not be influenced by the level of energy efficiency of the building; there are many other matters to consider.

In the medium to longer term there may, however, be ramifications in terms of a 'green taxation' arrangement for owners, developers and occupiers of property. Three schools of thought emerged on this issue in the interviews; the first suggesting that there is no indication that EPCs will lead to further taxation for building owners or users; the second (the majority) suggesting that EPCs may be the first step on the road towards taxation, and the third suggesting that the Government's green policy framework as a whole will lead to higher taxation. Of those interviewees who thought some form of taxation may be implemented, a number described this as a 'logical progression' (Interviewee 2); all foresaw it being some form of negative taxation instrument.

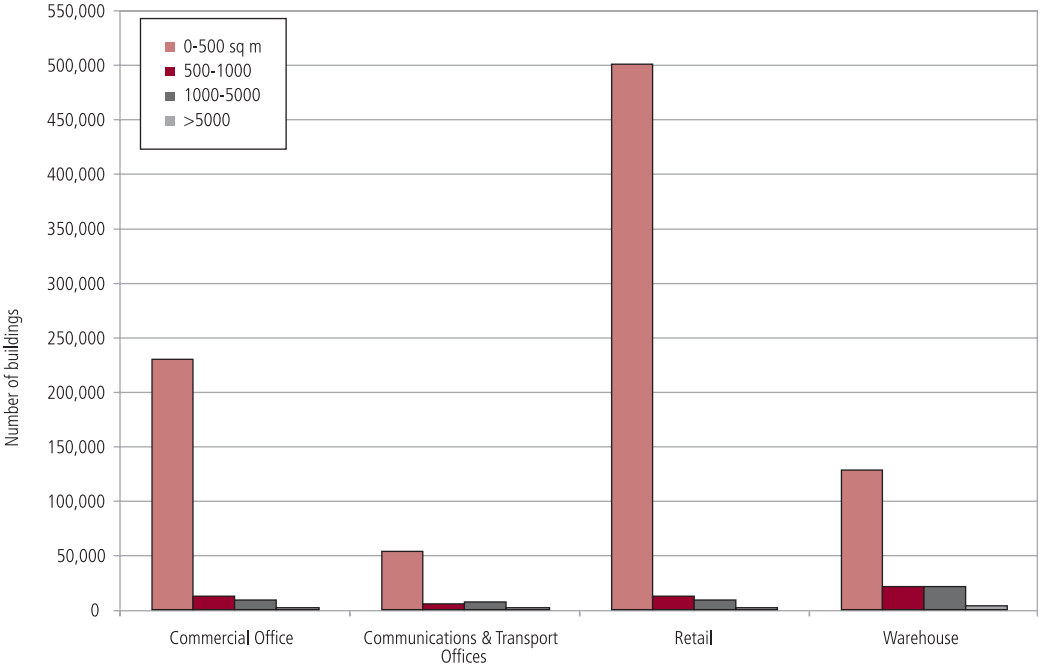
2.5 Potential impacts of the EPBD on commercial property

2.5.1 How much commercial stock is likely to be affected?

The DCLG Regulatory Impact Assessment (RIA) (DCLG, 2007) included a summary assessment of the financial costs and benefits of introducing the EPBD for the commercial property sector (ie non-dwellings or non-residential excluding public buildings). The assessment was carried out by Faber Maunsell for DCLG, and in this section we summarise the key points relating to commercial property, and in particular, the potential effect of the legislation in terms of the number of properties affected by EPCs.

The model used for the RIA was based on existing BRE / Valuation Office floorspace statistics in England and Wales. As Figure 7 shows, the majority of the buildings in the commercial sector are relatively small units of less than 500 sq m. However, this includes owner-occupied as well as leased properties.

Figure 7: Size range of commercial property stock in England and Wales (source: DCLG, 2007)

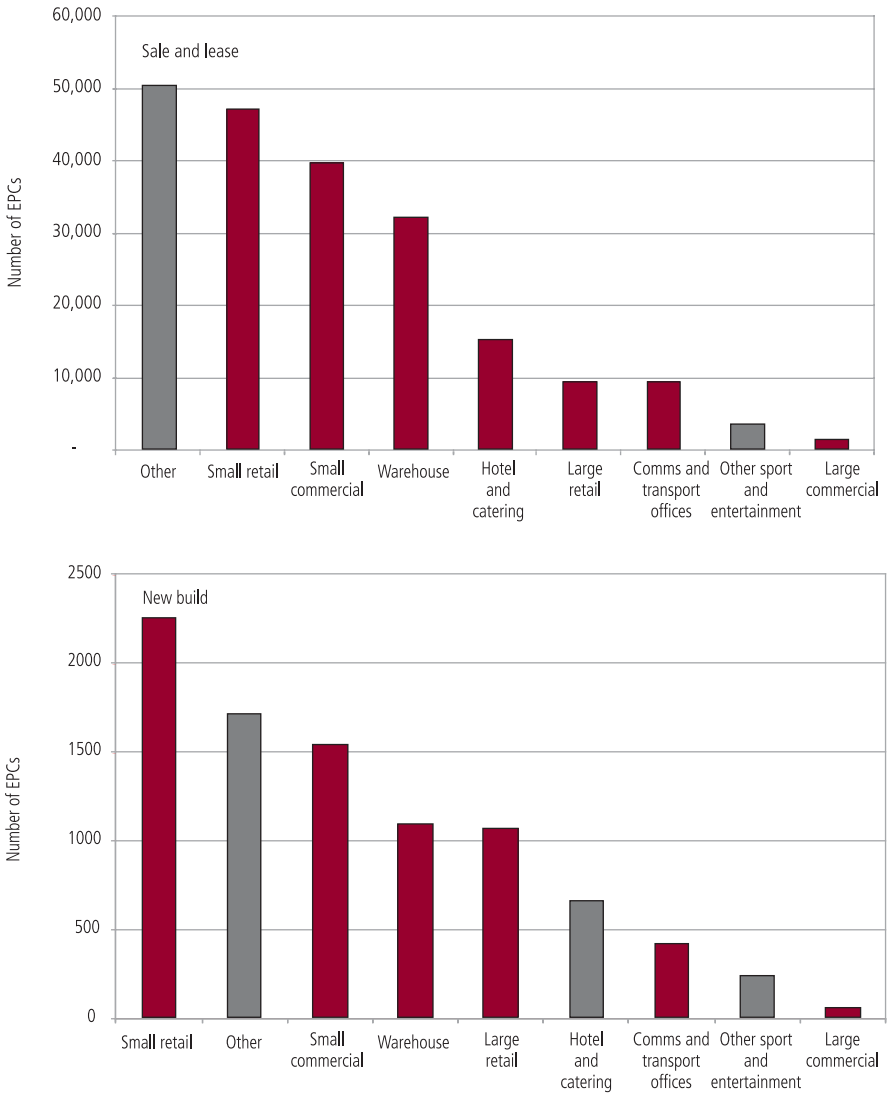


The model used by Faber Maunsell[5] to calculate the number of energy certificates each year is based on these statistics. The main 'trigger points' in the EPBD for production of an EPC are sale, lease and new build. To calculate the number of EPCs required each year for the period, 2008–2020, the model uses lease data from the BPF/IPD Annual Lease Review; new build stock flow information; and an assumed compliance figure for each sector.

Figure 8 shows the number of certificates required for the first year, 2008, in relation to the main commercial sectors for both sales/rent and new build. The main commercial sectors (commercial offices, communications and transport offices, retail and warehouses) show a total of 150,000 EPCs triggered by sales/rent (ie existing buildings) and new build. The overall total in the same year is 216,000 for all non-domestic buildings (excluding public buildings). However, this figure does not account for demand for EPCs or proxy EPCs required by potential sellers to determine potential valuation implications prior to sale.

[5] Our thanks are owed to Faber Maunsell for explaining the rationale behind the analysis to us.

Figure 8: Estimated EPCs for sale/lease and new build in England and Wales, 2008 (All non-residential excluding public buildings)[6]



Note: Key commercial property sectors highlighted in red

Figure 9 shows the general trend for all relevant commercial property for the relevant period, and Appendix 3 provides further details of the analysis.

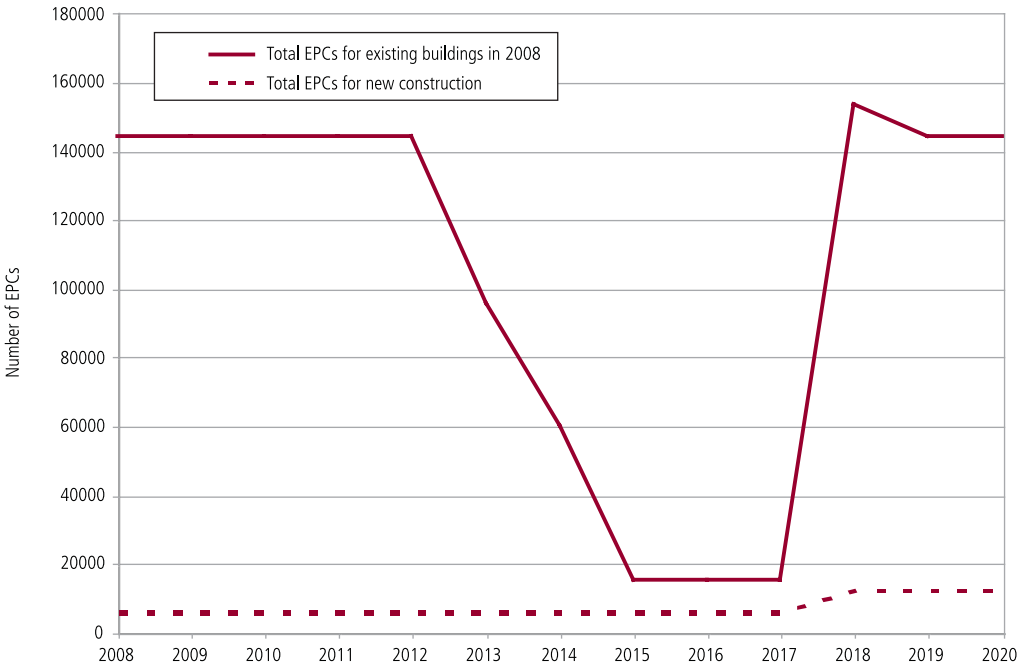
Several points should be highlighted in this analysis:

- The substantial fall in EPCs in 2013–2017 and subsequent rise is the combined result of existing stock being certificated as leases 'turn over' prior to that period, and because 're-certification' commences from 2018–2020. For existing and new properties, the 10 year period starts counting once they produced their first EPC upon sale, lease or construction.

[6] The analysis includes 'communications and transport offices' as a separate category.

- The turnover rates for 'sales/leases' are based on global figures derived from average lease lengths over a 10 year period for each main commercial sector, and the turnover is applied as a percentage to *all* relevant stock in each sector (ie both owner occupied and leased). The rationale for using a single rate based on lease turnover is that *'the majority of buildings are assumed to be rented rather than sold'* , and also once an EPC is produced initially for rental it can be reused on sale without further cost (DCLG, 2007)[7].
- All compliance rates are assumed to be more than 90%.

Figure 9: Projected EPCs for sale/lease and new build in England and Wales, 2008–2020 (key commercial sectors only)



To this extent, the figures are probably best treated as estimates and with some caution, given also that complex market dynamics will have an important effect on the primary trigger points over the same period. In fact because a global sale and lease rate is applied to all property in the database (both leased and owner-occupied) they probably represent an overestimate[8], simply on that point alone.

The overall net present value cost of implementation of EPCs (both direct and indirect[9]) for all commercial property (excluding public buildings) is calculated to be £1,148m over the period 2008–2020 (Table 3). In 2008, there are initial costs of £148m relating to EPCs, of which some 75% (or £102m) relates to the main commercial property

[7] For example, the relevant percentages used in 2008 are: 14.71% small retail; 9.43%, large retail; 18.18% small commercial; 14.93% large commercial; 19.61% industrial.

[8] A further area of concern in the analysis is the unit cost imputed for an EPC. These are calculated on the basis of a daily rate of £400 for assessors, but the time taken for each may well be an underestimate. The relevant unit costs in the analysis range from £1,800 for a large commercial premises to £260 for a small retail premises (see section 2.5.3 of this report).

[9] Including rating, data collection, management and administration.

sectors in the same year. As Table 3 shows, the benefits are seen as being in carbon savings, with some 4m tonnes of carbon saved[10] over the same period for all non-domestic stock (excluding public buildings). Although there is an overall net cost of £668m, this is considered to be 'value for money' by DCLG because of the resultant carbon savings[7].

Table 3: Summary of costs and benefits of DCLG preferred option (non-residential, excluding public buildings)

COSTS		
NPV of costs (England and Wales) (£m)	1,148	
BENEFITS		
NPV benefit from investment measures (£m)	418	
NPV benefit from management measures (£m)	62	
TOTAL BENEFITS (£m)	480	
NET COST (£m)	668	
Total carbon saving from all measures (tonnes of C)	4,052,700	
Total carbon saving in 2020 (tonnes of C)	360,000	
SOCIAL COST OF CARBON		
Cost per tonne of carbon saved	165	£/tonne
Comparison with social cost of carbon for period 2008 to 2020	94	£/tonne

2.5.2 Potential impact on carbon emissions and value

Several authors have previously expressed doubts as to whether the EPBD and EPCs will actually achieve reductions in carbon emissions, primarily based on the view that the 'split incentive' barrier will still be difficult to overcome (see for example Guertler et al., (2005), ACE (2005) and Lane (2007)).

However interviewees in this study expressed the view that if the market were to incorporate energy efficiency (as well as other environmental performance credentials) into the valuation process (ie properties were appraised on their economic value, and incorporated their environmental performance), this would have a significant 'indirect' impact on reducing carbon emissions because investors would see the tangible benefits of making improvements to their own assets. Also, if occupiers could be shown to value energy efficiency in a tangible way (ie through willingness to pay), this should act as a market signal to developers and investors that a demand for energy efficiency in the market exists, and occupiers are prepared to pay for this.

[10] The social cost of carbon is valued at £94 / tonne.

[11] The annual cost of £148m in England and Wales can be compared with IPD data for UK. Of some £21,208 mn of expenditure in 2006, £3,924 mn was development and improvement expenditure, and the balance 'purchase expenditure' (source: IPD data, email communication with Malcolm Frodsham). The annual cost of EPCs in the UK might therefore crudely represent in excess of 2.5% of annual development and improvement expenditure.

2. RESEARCH FINDINGS

Recent studies have suggested that occupiers are willing to pay more rent for a 'green building' (GVA Grimley, 2007 and Gensler, 2006). The RICS Green Value Report (2005) suggested that green features and their related performance can provide key benefits which include:

- Helping secure tenants;
- Commanding higher rents or prices;
- Enjoying lower tenant turnover;
- Costing less to operate and maintain in most cases;
- Attracting grants, subsidies and other inducements related to environmental stewardship, increased energy efficiency and reduced greenhouse gas emissions;
- Improving business productivity for occupants,

The issue of how environmental considerations can impact on value (for example, through depreciation and obsolescence rates) has also been identified as key by previous research from the Sustainable Property Appraisal Project based at Kingston University[12]. As GVA Grimley (2007) points out, sustainable offices provide a range of potential benefits for investors which have potential impact on capital values. However, barriers have frequently mitigated against such increases, including:

- Strong property investment market generally over recent years.
- Relatively higher perceived risk associated with untried and tested designs.
- Short-termism in the way that property assets are held and traded (therefore leading to higher initial capital costs to set against downstream revenue flows).
- A relatively low proportion of energy costs in the overall business cost mix.

However, the same research (GVA Grimley, 2007) suggests that the EPBD and related legislation could change the landscape with the emergence of a 'two tier market' and the following consequences for capital values:

- Better tenant retention and shorter void periods between leases, with easier re-letting.
- Higher rents – through increased benefits from lower operating costs (reduced by a third) and enhanced productivity. Stronger rental growth could occur, for example, and recent research has indicated that initial rents could be up to 10% higher in a green building than a conventional building (Gensler, 2006).
- Reduced depreciation of 'greener' offices leading to lower refurbishment costs and lower yields with increased liquidity.
- Availability of finance could depend on increased sustainability.

This view is corroborated by King Sturge (2007) who suggests that the impact of climate change, energy costs, legislation and CSR could result in a two-tier investment market with Grade A investment stock increasingly reflecting these four key issues. Using hypothetical data GVA Grimley (2007) also suggests that values may be higher in a green building. This increased performance is supported by evidence from the USA, which suggests that US REITs with superior energy efficiency outperform others[13] (Innovest, 2002). However, there is a case for

[12] http://www.sustainableproperty.ac.uk/sri-index.htm

[13] The research showed that of the 12 companies analysed in this report, the six companies with above average energy management performance, taken as a group, outperformed the below average companies over the past two years by over 3,400 basis points (thirty four percentage points) in the US stock market.

suggesting that the 'two-tier' market analogy is over simplistic. The reality may be simply that, in time, occupiers (and investors) will come to expect market-leading property to possess strong sustainability credentials, with less sustainable property being viewed at a discount to such property, but set within the wider context of value differences based on finer grades of sustainability, locational quality and other attributes.

The views of those participating in this study on the potential impacts on rental and capital values of the EPBD were that there would be no impact in the short term. In the long term, however, it was considered that there was a potential for both a positive and negative impact on values – creating a market differential between highly efficient and low efficiency buildings.

Interviewees considered that EPCs would have more impact on rental and market value in the longer term than the shorter term. The consensus of the potential impact on rental and market value in the short term ranged from 'none at all' to 'minimal' It is perceived that the impact will be seen in the longer term, when the market has incorporated sustainability into the value 'mix', potentially creating a market differential.

The rationale for changed behaviour as a result of the EPBD is highlighted by recent findings from Gensler (2006). In a survey of developers, investors and occupiers it was found that 75% of developers believed poor energy efficiency would have a negative impact on value and transferability of commercial property in the future. There is much to be gained by 'first mover' advantage, therefore.

However, a key question is the extent to which the valuation profession is ready to tackle this issue. The Vancouver Accord, a global commitment by valuation standards organisations and stakeholders in the valuation process to consider the interaction between sustainability and valuation, was launched on 2 March 2007[14]. Guertler et al (2005) suggests that there is a need for the valuation profession to tackle the value impacts ensuing from the EPBD by mainstreaming the potential impacts in their advice. As yet, there has been no guidance incorporated in the RICS Red Book as to how environmental issues can best be tackled in commercial property valuation, for example. Of course, it can reasonably be argued that the job of a valuer is to translate current market prices for commercial property into a likely market value for any given building, or group of buildings, and so, in that sense, it is investors, not valuers, who should be factoring depreciation and obsolescence risk into their appraisals and investment decisions (Capital Economics, 2006). However, as Capital Economics (2006) also warns:

'In the future, businesses concerned with fostering a greener image may simply refuse to occupy premises that do not meet minimum environmental standards. In such scenarios, commercial property landlords could find themselves facing significantly lower rental income streams, or significantly higher refurbishment costs than have been factored into investment appraisals in recent years. In a worst case scenario, they could find themselves the owner of a building that becomes obsolete even though its physical fabric would previously have supported many additional years of profitable use".

[14] http://www.worldgbc.org/default.asp?id=36&articleid=266&month=3&year=2007

2.5.3 Changes in leasing behaviour

In terms of leasing arrangements, interviewees mainly expressed views on expected changes in occupier behaviour. Occupiers were expected to react in different ways to the requirement for EPCs, depending on the type of business activity they undertake, the type of premises they occupy, and the level of customer contact they have. Office and retail occupiers were expected to be the first to take action on EPCs, with industrial occupiers responding more slowly. The type of building was considered to have a potential influence on occupier behaviour in relation to EPCs: for example, new buildings and those newly sold or rented will be required to have an EPC. It was felt that the lower end of the occupational market will be relatively unconcerned about the EPBD in the short term. But it is expected that there is one particular element of the market that will engage with EPCs and associated issues: namely, the high-end occupier, particular those that have a significant customer focus (for example, high street retailers). It is expected that EPCs will affect this group most to begin with and these activities will filter down to the *'masses'* (at least those who have some semblance of moral or ethical responsibility) (Interviewee 7).

Further to this, it is expected that occupiers will become a lot 'cannier' about the buildings on which they take decisions. One interviewee suggested

'The bigger Corporates have had sustainability and energy management at the top of the building selection criteria for several years. And those that care about it will have chosen buildings that are energy efficient. Occupiers are expected to use energy efficiency information to exact a stronger position on the form of lease that they sign up to' (Interviewee 9).

This view is important because it raises an issue over what shape or form such leases may take. We have recently seen the promotion of energy statements from the BPF, for example, as a way of underpinning the EPBD with transparent documentation[15]. Its roposed landlord's energy statement is based on actual energy use data and provides information that can be fed into DECs. The tenant's energy review, once completed, will provide the energy-use data required to produce a DEC.

Changes in occupier business behaviour are expected from the implementation of EPCs. There is a possibility this may affect the operating hours of businesses, particularly those that operate 24 hours a day, seven days a week. This may affect the building's operational rating by contributing to an occupier's increased carbon emissions. One interviewee cited two companies who have recently moved away from these working practices in order to reduce their overall carbon emissions. Another interviewee said

'With people coming in the door and seeing a 'D rated' certificate people are going to object. If the company is operating 24/7, they should be asked 'do you really need to?' (Interviewee 7).

This has clear implications for productivity, output and working arrangements and could have a significant impact on the retail sector, for example. Interviewees universally expressed the view that the EPC represents an opportunity for those involved in the property market to work together to collectively achieve improvements in environmental performance of existing stock. This will yield benefits for both parties; by improving the environmental performance of the building, the investor can benefit from any uplift in value and the occupier can benefit from reduced running costs. In addition, both parties can use these improvements in their standing in the market as good corporate citizens and owners/occupiers of 'greener buildings'. Working together with other parties was seen as key to the

[15] See http://www.les-ter.org.uk

realisation of the benefits of EPCs. One interviewee said *'let's see what we can do together [on EPCs] that would actually be good for you (the occupier) and me (the investor). Then we both could say 'we've done it' and get the benefits from our respective market places'* (Interviewee 2).

The EPBD is also expected to change behaviour by overcoming the landlord – tenant divide through separate 'asset' and 'operational' ratings. This is a point emphasised in the recent DCLG regulatory impact assessment which measured the net present value of the impact of the EPBD on relevant buildings (Box 1). This review suggests that an EPC will bring benefits in terms of increased efficiency in three main ways. Firstly, landlords will see advantages through charging higher rents and in some cases will be offering a fully-serviced building where they are responsible for energy supply. Therefore the EPC will be of direct benefit to the landlord. Secondly, better ratings will lead to higher rents and values and so landlords will be under increased pressure to improve energy efficiency to maintain the value of their property investment. Thirdly, there will be a greater desire to be associated with energy efficient buildings. The increased emphasis on CSR and the desire to own and occupy 'green' buildings could therefore lead to owners and investors seeking to improve existing stock particularly at the top end of the market. These findings are similar to those of this study, with benefits being identified for the investor and the occupier, specifically in the area of CSR.

Tenants could also benefit because EPCs provide a negotiating tool for rental agreements which could lead to energy improvements or reductions in rent to compensate for poor energy performance. This is an important point as the relationship between rental value and energy certification becomes more transparent.

Box 1: DCLG Regulatory Impact Assessment (EPBD-Articles 7-10)

The following options for implementation of the EPBD were analysed by Faber Maunsell for DCLG:

- Option 1 – 'Do nothing' – not taken forward as infraction proceedings would result.
- Option 2 – Non-statutory voluntary approach – this does not meet the Directive's requirements
- Option 3 – Strict interpretation of the Directive.
- Option 4 – Wider interpretation of the Directive.

Article 7(1) of the Energy Performance of Buildings Directive requires an Energy Performance Certificate (EPC) to be made available whenever a building is constructed, sold or rented out and Article 7(2) requires that the EPC should be accompanied by a list of cost-effective measures to improve energy efficiency. In relation to Articles 7 (1) and 7(2) in the private marketed sales dwellings sector, Option 4 is based on the production of a new EPC each time the property is marketed whereas Option 3 requires a new EPC only when the old one expires after 10 years (the longest validity period permitted by the Directive). For Article 7(1) and 7(2) in all other sectors a 10 year validity period has been selected. In Option 4 the list of cost-effective measures is widened to include advice on how to operate the building in an energy efficient manner and the use of renewable energy technologies.

Option 4 has a lower net cost than Option 3, and, in addition, the carbon savings are greater from Option 4. Overall the review concludes that Option 4 offers the best value for money across the relevant articles.

2.5.4 Practical issues with EPBD implementation and process

The following issues were identified by interviewees as potential difficulties with the process and implementation of the EPBD:

- Certification process;
- Ownership of the process of certification in new build;
- Data availability for existing buildings;
- Recommendations;
- Lack of assessors;
- Initial benchmarks

Certification process

Several interviewees identified potential problems with the process of certification, specifically the modelling behind the rating process. One interviewee identified that the Directive is largely written in theoretical terms, without mention of energy metering. For example, all the phraseology and thinking was originally written in terms of modelling performance rather than basing judgments on actual data such as metered energy. After significant lobbying, it is now the case that 70% of European countries will use metered energy for measuring performance for the permanent display certificates (Interviewee 7).

The model to be used to produce a rating for the sale or rent certificate is the same model used to demonstrate compliance with the Building Regulations for buildings other than dwellings. Performance is measured by calculating the annual energy use for a proposed building and comparing it with the energy use of a comparable 'notional' building. Both calculations make use of standard sets of data for different activity areas and call on common databases of construction and service elements. One interviewee suggested, *'the SBEM[16] model is purely about taking the fabric and surfaces of the building and the area, the geometry and the orientation and calculating the efficiency of that building'* (Interviewee 5).

Interviewees were not optimistic about the usability of the SBEM model; those who had some knowledge or experience of the model (seven of 10 interviewees), six identified it as overly-complicated and too difficult to use. One interviewee said *'you will need specialists to sort out the geometry of the building and the actual store areas and to work out the daylight on each floor, its not particularly straightforward at all'* (Interviewee 7). Another said *'it is such a difficult tool to use and so subsequently what you have got to do is say you have a property in Central London which may have basement storage, a shop, a boiler room, parts of offices, and all these have to be dealt with in a separate sort of way, walls, ceilings, floors, windows for each area. It could take weeks to get all the information, several days to collate all the information before you try and plug it into this thing before you get round to preparing a Certificate'* (Interviewee 10). However, another interviewee (who had undertaken the Building Research Establishment (BRE) training course on the SBEM model) considered it to be both highly usable and fairly simple, once mastered on the training course.

[16] See footnote 4, page 15

Ownership of the certification process in new build

Several interviewees identified the lack of ownership of the certification process in new buildings, which will be required to have EPCs. EPCs are designed to encourage engagement between those involved in the design stages because this is when most influence can be had over the energy efficiency of the building. However, there could potentially be a lack of engagement in the early stages which could cause time delays later on, if no responsibility is taken for the ownership of the certification process early in the process. This responsibility can fall to the contractor. As one interviewee put it,

'So what happens is you go out to tender on one basis, the contractor then runs the SBEM, then comes back to you and says 'the building design doesn't work, we'll have to tweak this, need to increase this (ie double to triple glazing) or reduce this (ie amount of air cooling). This can result in a return to the drawing board 'to fiddle with the edges' at the stage when the contractor wants to get on and build it. There doesn't seem to be a way to do it before you go to tender' (Interviewee 4).

Data availability for existing buildings

Certification on new buildings is considered very easily achievable; data for sale or rent certificates can be collated in the design stage and data for permanent display certificates can be collected from the outset of the first lease. However, existing buildings which form the vast majority of building stock are considered to be very different. One interviewee said:

'With older buildings, you are lucky to get any plans, you certainly won't get any energy performance data, there is no fuel consumption data and by and large landlords don't care! If they have tenants, the tenants don't have any liability in terms of their leases so no one takes responsibility' (Interviewee 10).

In terms of sale or rent certificates for existing buildings, it is expected that pragmatism will win. One interviewee commented, *'it will have to be a case of Building A is constructed from this material, and the roof is made of that material, the windows are this type of glazing and the air conditioning system and boiler and this make and this age…it is this type of information required. If it is available, great; if not, the surveyor will have to visit the building and form a judgment'* (Interviewee 5).

The making of 'recommendations'

In the case of sale or rent certification, certificates are to be accompanied by recommendations for cost-effective improvements in the energy efficient building (Interviewee 5). Property owners will be provided with recommendations for improvement by the assessor. One interviewee said:

'It is not a case of having an assessment and being told 'Here mate, get on with it', you also get details of what you want to do to make it get better' (Interviewee 1).

Several interviewees identified that these recommendations could be used in price 'chipping', negatively impacting on the capital or rental value of the property.

Lack of assessors

The main risk identified by the DCLG is the potential lack of energy assessors to carry out the inspections and produce energy certificates, although, as yet, this potential problem has not been quantified precisely. This will be critical during the early years of the EPBD, as EPCs will be needed on sales, leases and new builds (see Section

2.5.1 above). There may well be a move by landlords to gain 'first mover' advantage by rating their portfolios in the first few years of the scheme. It may also be the case that investors will formulate 'dummy' ratings in advance of sale or lease to assess potential pricing impacts. This will also have cost implications, with the DCLG review suggesting a typical cost ranging from £260 for a small retail unit through £480 for a small commercial building to £1,790 for a large commercial building. The robustness of these cost estimations could well be called into question, their probably not having been made in the light of the likely impact of the limited initial supply of assessors and demand for their services by landlords.

Several interviewees confirmed that a lack of accredited SBEM assessors[17] may cause a problem for the planned implementation of the EPBD, and was actually identified as a factor that may delay implementation (Interviewee 1). It was suggested that, as of April 2007, there are only 50 accredited SBEM assessors in England but this is yet to be verified by the BRE, the training and accreditation body. One interviewee blamed the Government's lack of urgency in their implementation of the scheme, saying:

'Until the Government has decided when to implement the scheme, why bother to get people trained up – there is no urgency to it' (Interviewee 1).

The initial benchmark

The setting of the initial benchmarks for each efficiency rating was identified by interviewees as an issue of contention. It was suggested that *'where the Government choose to set the benchmarks for the divisions between each rating could affect the response of the market and any subsequent adjustments in value of properties'* (Interviewee 10). This was identified as something that Government need to bear in mind. If it were set so low that all of the buildings gained an A rating, there is no incentive for owners to improve their buildings. Further to this, the bar should not be set too high. The A rating needs to be accessible to building owners to provide an incentive for improvements (Interviewee 6). The consensus was that most buildings would fall into C rating and below.

2.6 Conclusions

2.6.1 EPBD as a part of a general energy policy shift

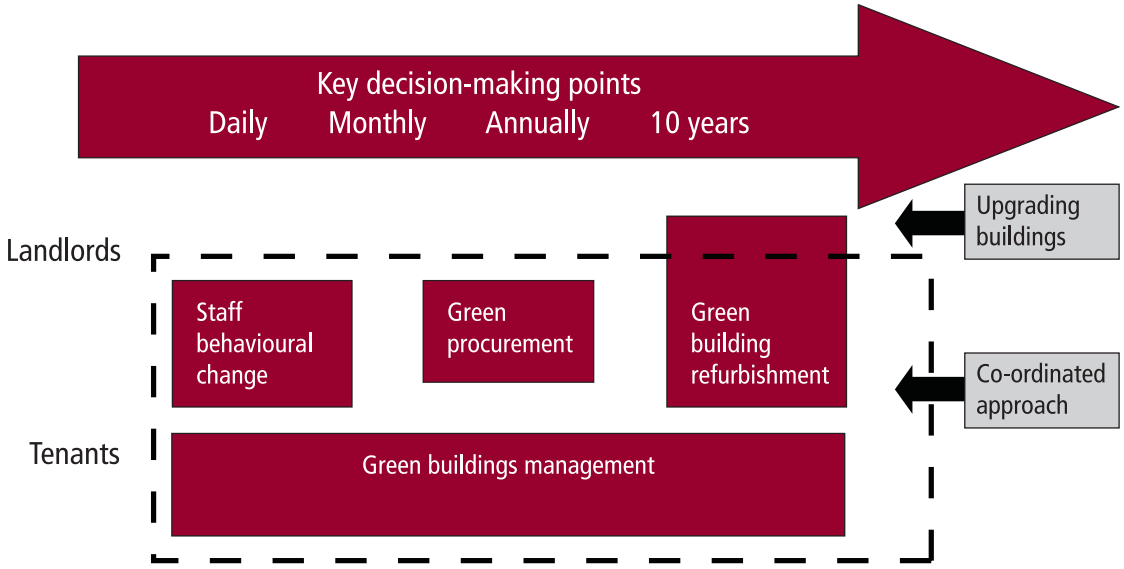
It is clear that the EPBD is already a significant issue for property investors and will become increasingly so as implementation of the Directive is rolled out.

Before one focuses on what the regulations will require investors to do, it is worth remembering that the EPBD is just part of the drive towards energy efficiency in the commercial property sector. In order to achieve energy savings benefits in a wider sense action will need to be taken by both landlords and tenants at key moments of opportunity, with actions having different payback periods over time (Mayor of London, 2007). Figure 10 summarises key actions at different timescales. These include:

- Daily and monthly–achieving energy savings through company policy, and using energy audits.
- Annually–sustainable procurement policies for appliances and vehicles.
- Every 3–10 years: energy savings as part of refurbishment for a new tenancy (eg secondary glazing; new doors and cavity insulation)

[17] The shortage of assessors was a key reason for the Government announcing its revision to the planned implementation of Home Inspection Packs (which include Energy Performance Certificates).(see http://www.communities.gov.uk/index.asp?id=1002882&PressNoticeID=2427)

Figure 10: Areas of opportunity for reducing carbon emissions (adapted from Mayor of London, 2007)



Therefore the EPBD should be taken in the context of a wider concern over energy efficiency and climate change. ACE (2005) suggest that EPCs (through the EPBD) would have a limited impact on energy efficiency and hence a small contribution to combating climate change in the longer term, primarily through the continued presence of the 'split incentive' barrier, but also stemming from the wider view that it would take a step change in investor and valuer behaviour for inertia to be overcome. In relation to the UK property market, therefore it is not clear whether the benefits will be seen in the short term. As one interviewee said:

'It will take years for the whole of the stock to come on to the market and actually it's not the new buildings you want to make more efficient, it's the older buildings too – only a small proportion of these are dealt with by EPCs' (Interviewee 2).

The DCLG/Faber Maunsell analysis suggests a significant number of commercial properties may be affected. Caution should be attached to these figures not only because of the assumptions underlying the data, but also because of the recognition by DCLG that there is a potential shortfall in assessors. Nonetheless there is no escaping the fact that the EPBD is on the horizon, and is a factor which would be ignored at peril.

There is evidence from the current research to suggest that there is still some confusion and uncertainty over the EPBD in the marketplace. The EPBD is part of a much larger expanding 'green agenda' on which the current government and future governments in the UK will place increasing emphasis. As things stand, however, the EPBD could potentially impact in procedural terms on a substantial number of commercial properties over the next 2–3 years (as discussed at 2.5.1. above).

2.6.2 EPBD & implications for investors

There has been a degree of discussion in the literature and anecdotally in the market place about the potential for energy certification to lead to capital and rental value differentiation by virtue of the relative energy efficiency of properties. Whilst pronouncements of a two tier market have been made in this regard, it is perhaps worth recalling other instances when such calls have been made, for example when VAT arrangements and Disability Discrimination

Act compliance for buildings changed, and the fact that no such tiers noticeably arose or remained. However, within this research, although the number of interviewees was limited and it was difficult to tease out views on value impact, evidence to suggest that in the medium/long term certification is likely to lead to value differentials was identified. In this respect, it is suggested that investors who are currently unprepared for the EPBD are likely to face difficulties. For example, several interviewees identified that the recommendations contained within an EPC could be used in price chipping, negatively impacting on the capital or rental value of the property.

Other issues which this research has identified that are considered to be of most pressing concern to property investors include:

- Costs of surveys – Although it is possible to identify possible costs for EPC surveys, as the DCLG has done (at £480 to £1,790 for commercial buildings) this does not account for the shortage of qualified and approved assessors within the market place. Common sense dictates that these DCLG figures might be appropriate where there is market equilibrium but where there is a shortage of supply of service providers, such costs may be significantly higher.
- Potential difficulties with process – Although the regulations have been published, there is still a certain amount of doubt in the market place with regard to some of the detail. For example:
    - Certification is not required for certain buildings, such as industrial ones, with low energy demand (reference presumably needs to be made to the Building Regulations to verify what this means) but whether this includes storage and distribution units or relates only to manufacturing facilities is unclear.
    - Whether or not the initial benchmarks against which buildings will be rated in terms of energy performance are robust or appropriate.
    - The capability of the enforcement regime, shared by Building Control and Trading Standards divisions of local authorities, to cope with the large number of likely transactions and completions may cause problems such as delay for those involved in the transaction process.
- Shortage of assessors – As noted above, this should be a concern for investors, as it certainly is for the government (and was the chief reason given for the delay in implementing the first phase of the EPBD, ie as it relates to residential property). It is suggested that wise investors will already have begun to consider strategies for procuring the services of energy assessors in order to try to diminish the potential problems that they might encounter because of this situation, such as affecting the marketing of properties.

As a bare minimum, therefore, it is suggested that property investors should consider, if they have not already done so, acting on the following recommendations:

- Developing their strategic thinking on the potential value impact from the certification of the energy performance of buildings. What is their view and likely response, for example, to the potential for price chipping by purchasers or occupiers and a perceived increased obsolescence of a poorly rated building?
- Considering how many properties are likely to be traded in any given period of time and quantifying the likely need for accredited assessors. This should thereafter lead to proactive procurement of the limited number of accredited assessors' services.
- Addressing the procedural implications of procuring certificates, such as data availability for existing buildings, ahead of time. This will require a joined-up approach between fund managers, asset managers, facilities managers and energy assessors.

2.6.3 What else needs to be known?

It is strongly suggested that more work needs to be carried out into the potential number of EPCs, their impact on value and their cost to the property investment industry in the UK. The best-prepared investors, however, will already be considering the impact of the EPBD on their investment assets and the potential impact on investment worth and pricing for the market. It is also recommended that more reliable research into occupiers' requirements for energy efficient buildings is sought.

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APPENDIX 1 LIST OF USEFUL WEBSITES

- DCLG Energy Performance of Buildings: http://www.communities.gov.uk/index.asp?id=1504720
- The (EU) European Energy Performance of Buildings Directive (EPBD) Directive Implementation Advisory Group (DIAG) has been established to advise the UK Government on the energy performance of buildings and the implementation of the European Energy Building Performance Directive in a timely manner. http://www.diag.org.uk/
- Energy Performance of Buildings Directive, available at: http://europa.eu.int/eur-lex/pri/en/oj/dat/2003/l_001/l_00120030104en00650071.pdf
- The EPBD Buildings Platform is a European Commission initiative in the framework of the Intelligent Energy - Europe (2003-2006) programme, which provides information services for practitioners and consultants, experts in energy agencies, interest groups and national policy makers in the European Member States for helping the implementation of the European Energy Performance of Buildings Directive (EPBD). http://www.buildingsplatform.org
- The Institutional Investors Group on Climate Change (IIGCC) is a forum for collaboration between pension funds and other institutional investors on issues related to climate change. http://www.iigcc.org/
- LEnSE is a European research project that responds to the growing need in Europe for assessing a building's sustainability performance. The project draws on the existing knowledge available in Europe on building assessment methodologies. The main objective of LEnSE is to develop a methodology for the assessment of the sustainability performance of existing, new and renovated buildings, which is broadly accepted by the European stakeholders involved in sustainable construction. http://www.lensebuildings.com/

APPENDIX 2 SUMMARY OF INTERVIEWEE SAMPLE

	Investor (I) / Technical T)	Date of Interview
1	T	5/3/07
2	I	6/3/07
3	I	6/3/07
4	I	6/3/07
5	T	7/3/07
6	T	7/3/07
7	T	7/3/07
8	I	8/3/07
9	T	9/3/07
10	I	12/3/07
11	I	12/3/07
12	I	12/3/07

APPENDIX 3 COST AND NUMBER OF EPCS IN ENGLAND AND WALES

(SOURCE: DCLG/FABER MAUNSELL)

Number of EPCs for existing non-domestic buildings in 2008 (England + Wales)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total by Sector	
Small commercial	-	39,555	39,555	39,555	39,555	39,555	19,778	-	-	-	-	39,555	39,555	39,555	336,220	16%
Large commercial	-	1,314	1,314	1,314	1,314	1,314	1,314	920	-	-	-	1,314	1,314	1,314	12,746	1%
Comms and transport	-	9,367	9,367	9,367	9,367	9,367	9,367	6,557	-	-	-	9,367	9,367	9,367	90,860	4%
Hotel and catering	-	9,268	9,268	9,268	9,268	9,268	9,268	9,268	9,268	9,268	9,268	14,828	9,268	9,268	126,041	6%
Other	-	50,272	50,272	50,272	50,272	50,272	5,027	-	-	-	-	50,272	50,272	50,272	407,200	20%
Small Retail	-	46,974	46,974	46,974	46,974	46,974	46,974	37,580	-	-	-	46,974	46,974	46,974	460,350	22%
Large Retail	-	15,011	15,011	15,011	15,011	15,011	15,011	15,011	15,011	15,011	15,011	24,018	15,011	15,011	204,153	10%
Other sport and entertainment	-	3,355	3,355	3,355	3,355	3,355	3,355	3,355	3,355	3,355	3,355	5,368	3,355	3,355	45,628	2%
Warehouse	-	31,924	31,924	31,924	31,924	31,924	3,192	-	-	-	-	31,924	31,924	31,924	258,581	12%
Total EPCs for existing in 2008	-	207,040	207,040	207,040	207,040	207,040	113,287	72,690	27,634	27,634	27,634	223,620	207,040	207,040	**1,941,778**	93%

Number of EPCs new construction of non-domestic buildings from 2008 to 2020 (England + Wales)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020		
Small commercial	-	1533	1533	1533	1533	1533	1533	1533	1533	1533	1533	3050	3050	3050		
Large commercial	-	59	59	59	59	59	59	59	59	59	59	117	117	117		
Comms and transport	-	419	419	419	419	419	419	419	419	419	419	834	834	834		
Hotel and catering	-	656	656	656	656	656	656	656	656	656	656	1305	1305	1305		
Other	-	1711	1711	1711	1711	1711	1711	1711	1711	1711	1711	3405	3405	3405		
Small Retail	-	2250	2250	2250	2250	2250	2250	2250	2250	2250	2250	4478	4478	4478		
Large Retail	-	1062	1062	1062	1062	1062	1062	1062	1062	1062	1062	2113	2113	2113		
Other sport and entertainment	-	237	237	237	237	237	237	237	237	237	237	472	472	472		
Warehouse	-	1087	1087	1087	1087	1087	1087	1087	1087	1087	1087	2162	2162	2162		
Total EPCs for New Construction	-	9,013	9,013	9,013	9,013	9,013	9,013	9,013	9,013	9,013	9,013	17,937	17,937	17,937	143,946	7%
Total EPCs - England & Wales	-	**216,053**	**216,053**	**216,053**	**216,053**	**216,053**	**122,300**	**81,704**	**36,647**	**36,647**	**36,647**	**241,557**	**224,977**	**224,977**	**2,085,723**	**100%**

Cost of EPCs (£)

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Small commercial	-	19,185,765	19,185,765	19,185,765	19,185,765	19,185,765	9,692,506	199,248	199,248	199,248	199,248	19,383,020	19,383,020	19,383,020	164,567,383
Large commercial	-	2,359,787	2,359,787	2,359,787	2,359,787	2,359,787	2,359,787	1,654,142	7,639	7,639	7,639	2,367,349	2,367,349	2,367,349	22,937,826
Comms and transport	-	16,821,383	16,821,383	16,821,383	16,821,383	16,821,383	16,821,383	11,791,304	54,453	54,453	54,453	16,875,291	16,875,291	16,875,291	163,508,833
Hotel and catering	-	8,240,810	8,240,810	8,240,810	8,240,810	8,240,810	8,240,810	8,240,810	8,240,810	8,240,810	8,240,810	13,218,539	8,325,194	8,325,194	112,277,030
Other	-	24,352,810	24,352,810	24,352,810	24,352,810	24,352,810	2,635,489	222,453	222,453	222,453	222,453	24,573,039	24,573,039	24,573,039	199,008,469
Small Retail	-	12,505,904	12,505,904	12,505,904	12,505,904	12,505,904	12,505,904	10,063,233	292,548	292,548	292,548	12,795,527	12,795,527	12,795,527	124,362,882
Large Retail	-	23,255,385	23,255,385	23,255,385	23,255,385	23,255,385	23,255,385	23,255,385	23,255,385	23,255,385	23,255,385	37,262,460	23,392,065	23,392,065	316,600,443
Other sport and entertainment	-	5,197,593	5,197,593	5,197,593	5,197,593	5,197,593	5,197,593	5,197,593	5,197,593	5,197,593	5,197,593	8,328,183	5,228,141	5,228,141	70,760,392
Warehouse	-	28,233,977	28,233,977	28,233,977	28,233,977	28,233,977	2,950,534	141,262	141,262	141,262	141,262	28,373,827	28,373,827	28,373,827	229,806,947
Direct EPC Costs	-	140,153,415	140,153,415	140,153,415	140,153,415	140,153,415	83,659,391	60,765,430	37,611,391	37,611,391	37,611,391	163,177,234	141,313,452	141,313,452	**1,403,830,206**
Indirect EPC costs	-	8,200,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	5,700,000	**76,600,000**
Total Costs (England and Wales)	-	**148,353,415**	**145,853,415**	**145,853,415**	**145,853,415**	**145,853,415**	**89,359,391**	**66,465,430**	**43,311,391**	**43,311,391**	**43,311,391**	**168,877,234**	**147,013,452**	**147,013,452**	

APPENDIX 4 IMPLEMENTATION OF THE EPBD IN EU MEMBER STATES

The most comprehensive information available about implementation of the EPBD across member states is available on the Buildings Platform website of the EU Commission: http://www.buildingsplatform.eu/epbd_publication/doc/countryreports_p2609.pdf The country reports cover the following topics:

- Legal context (ie details about responsible government departments and legal instruments)
- Status of implementation
- Calculation procedures
- Requirements for new buildings
- Requirements for existing buildings
- Certification of buildings
- Inspections of boilers and air conditioning
- Future planning (ie details about likely implementation dates and other legal requirements)
- Relevant information (eg sources of further information)

In order to provide an indication of progress in implementing energy certification across the European countries for which information is available, the following table sets out national requirements for the certificates and certain other energy-related policies, as set out in the Buildings Platform country reports.

APPENDIX 4 IMPLEMENTATION OF THE EPBD IN EU MEMBER STATES

National requirements for energy certification in Europe				
Country	Implementation dates			Regulatory review/ policy matters
	New Build	Existing Buildings	Public Buildings	
Austria	January 2008	January 2009	January 2009	Earlier implementation may occur if regional regulators adopt measures sooner.
Belgium (Flemish Region)	January 2006	2009 (residential in 2008)	December 2008	Two yearly evaluation of the regulations
Belgium (Brussels)	2007	2008/2009	2008/2009	Five yearly evaluation of the regulations
Bulgaria	January 2005	January 2005	January 2005	Regulatory review 2009
Czech Republic	January 2009	January 2009*	January 2009	* N.B. Existing Buildings will only be those which are new or refurbished after 1 January 2009
Denmark	December 2005	September 2006	December 2006	Regulatory reviews 2010 & 2015 (at which stringent energy efficiency improvements will become mandatory)
Estonia	January 2009	January 2009	January 2009	Subsidies exist to promote certification
France	July 2007	November 2006 (when sold) & July 2007 (when let)	January 2008	Regulations pertaining to air conditioning still under discussion
Germany	February 2002	September 2005	September 2005	Intention to simplify certification procedures to reduce costs Still negotiating a means of accrediting assessors
Greece	January 2009	January 2009	January 2009	Air conditioning inspections commence 2007 Regulatory review 2009
Hungary	2007/2008	2007/2008	2007/2008	Five yearly evaluation of the regulations
Ireland	July 2008	January 2009	January 2009	Government developing alternative energy systems assessment software
Latvia	Still in negotiation			Should be implemented within 3 years
Lithuania	January 2007	January 2009	Unclear (presumed as per private sector)	Five yearly evaluation of the regulations and assessors ("experts") training regime
Luxembourg	Still in negotiation*			*Elements of the EPC process do apply to residential buildings
Malta	Still in negotiation			Air conditioning inspections possible by 2008/2009
Netherlands	January 2008	January 2008	January 2008	Public buildings exclude schools and healthcare facilities
Norway	Partial implementation of certification & inspection of air conditioning by 2008/2009			
Poland	January 2008	January 2009	January 2009	Five yearly evaluation of the regulations
Portugal	Mid 2007	January 2009	January 2008 or January 2009 (depending on size)	Air conditioning inspections commence January 2009
Romania	January 2007	January 2007	January 2007	Regulatory review 2009
Slovak Republic	January 2008	January 2008	January 2008	
Slovenia	2008	2009	2008	Applies to major refurbishments also
Sweden	January 2009	January 2009	Available October 2006, required December 2008	Regulatory review 2008

Source: Adapted from: http://www.buildingsplatform.eu/epbd_publication/doc/EPBD_BuPLa_Country%20reports_20070525_p2731.pdf

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