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MARKET RESEARCH

TRADE SECTOR PROFILES

Domestic glazing sector

June 2007

energy saving trust

Energy Efficiency **Partnership** for Homes

CONTENTS

Report prepared for the Energy Saving Trust (www.energysavingtrust.org.uk) and the Energy Efficiency Partnership for Homes (www.eeph.org.uk).	
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1. INTRODUCTION

1.1. This report

This report is one of a series of profiles of key UK industry sectors impacting on the use of energy by UK households.

It has been compiled by Purple Market Research Ltd (www.purplemr.co.uk) for the Energy Saving Trust (www.energysavingtrust.org.uk) and the Energy Efficiency Partnership for Homes (www.eeph.org.uk).

Each profile summarises information available in the public domain on the relevant sector, validated and supplemented through consultation with key players and commentators within the sector. A full list of sources accessed for the research is given at the end of each section of the report.

This report relates to the UK domestic glazing sector, with particular reference to windows.

1.2. Definition of the domestic glazing sector

For the purposes of this report the 'domestic glazing market' has been defined as glazing installed in UK households, whether in the existing housing stock (refurbishments), in new builds or in social housing.

Glazing products fall into three main categories, windows, doors and conservatories, although the main focus is on windows. Domestic glazing encompasses both single and double glazed windows, with the focus on products which have been accredited within the Energy Saving Recommended (ESR) scheme.

2. SUMMARY OF KEY FINDINGS

2.1. Windows: energy consumption and emissions

Heating and hot water in housing make up around 25% of total national energy consumption, and at the same time emissions from domestic buildings account for some 27% of all UK carbon emissions. An estimated 9.5 million windows are replaced each year in the UK, and if these replacements were all Energy Saving Recommended (ESR) products, around 285 million kilowatt hours of energy per annum could be saved.

In addition:

- Poorly insulated window frames and single glazed windows account for up to 20% of heat loss in the average home. Double glazing cuts heat loss and also reduces noise and condensation problems.
- Installing double glazing can cut heating bills by £80-£100 a year and 680 kilograms of CO_2 (or four double decker buses full of CO_2) each year.
- If everyone in the UK who could install double glazing actually did so, it would save £500 million and 3.5 million tonnes of CO_2.

2.2. Market size and key segments

The UK's domestic glazing sector, inclusive of domestic windows, doors and conservatories, reached an estimated £3.8bn in 2006 according to Market and Business Development (MBD) and trade estimates. Palmer Market Research estimates the size of the market in 2006 in units to be as follows.

Product segmentation of the UK domestic glazing market 2002-2009 (units)

Description	2002	2003	2004	2005	2006	2007	2008	2009
Windows (million)	9.82	10.12	9.89	9.38	9.20	9.02	9.09	9.15
Doors (Million)	1.88	1.98	2.00	2.00	1.99	2.03	2.09	2.16
Conservatories (thousands)	186	205	202	185	187	196	212	229
Secondary Glazing (thousands)	230	197	177	185	187	187	191	195

Source: Palmer Market Research

Windows therefore account for the major share of the market. In terms of number of frames, the windows market in 2006 is estimated by Palmer to be split 67% home improvement, 16% new housing and 17% social housing.

2.3. Market trends and forecasts

Sales of **windows and frames** have been erratic during the last few years, with the refurbishment sector showing signs of maturity following strong growth through most of the 1990s. The doors sector has shown more stable growth between 2002 and 2006, peaking at £786m in the latter year. This growth is largely due to door replacement programmes for social housing. Sales of conservatories also peaked in 2003 (at £1.1bn), before declining by some 3% during 2004 and 2005.

The total UK residential energy efficiency market inclusive of double glazing, central heating and building thermal insulation, will increase by around 10% between 2006 and 2009, driven by construction sector growth, the Energy White Paper as well as current and future changes in building regulations.

Other noticeable trends within the sector include:

- **The changing market share of various frame materials**: PVC-U predominates, although aluminium is gaining market share primarily as a result of its use in apartment style developments.
- **Increase in penetration**: 83% of homes had some form of double glazing by 2004.
- **Rising costs leading to price pressures** within the supply sector.
- **Market saturation**: a key issue, with a very high percentage of homes in the private sector now fitted with replacement windows.

2.4. Market drivers and developments

A key development in the sector has been the growth in the penetration of double glazing. In 1976 fewer than 10% of existing homes had double glazing in one or more rooms. In 2004 market penetration reached almost 83%.

- **Regulations**: one of the most important drivers of change in the broader residential energy efficiency sector and hence also in the domestic glazing market is legislation in the form of building regulations, discussed in greater detail in sections 3 and 4 of this report.
- **Government and other initiatives:** other government policies and initiatives that influence the domestic double glazing sector (again, outlined in detail in section 3 of this report), include Window Energy Ratings and Energy Saving Recommendations for windows, Decent Homes, Energy Performance Certificates (EPCs), the Code for Sustainable Homes, and the Market Transformation Programme (MTP).
- **Regulatory, certification and compliance bodies** such as Fenestration Self-Assessment (FENSA) and the British Fenestration Ratings Council (BFRC).
- **Levels of construction activity and housing trends.** The type, style and design of houses, as well as housing density also impacts upon the domestic glazing sector. During 2004 the continuing fall in the conservatory market was in part influenced by a decline in the share of detached houses. This movement away from detached houses towards private sector flats meant a further decline in overall share of windows during 2005 and 2006. In addition, the fall in market value of conservatories meant that, as a product category, conservatories had an overall market value less than that of sliding patio doors. Sliding patio doors, in turn, have regained some market share over hinged doors, due to their increasing use in flats. During the same period, aluminium frames have shown fresh growth to a fifteen-year high, mainly due to their usage in city centre apartments where commercial style products are used.

The introduction of Window Energy Ratings, the launch of the BFRC scheme in February 2004, and the forthcoming Energy Performance Certificates will, it is hoped, influence the uptake of energy efficient windows.

2.5. Supply sector

The domestic glazing supply sector is a very fragmented one, comprising as it does vertically integrated glazing companies, commercial glazed door manufacturers, rooflight manufacturers, PVC-U and aluminium systems fabricators and installers, bespoke glazing contractors, steel window manufacturers as well as major joinery companies.

Ongoing price pressures caused by increasing competition in a shrinking market, as well as the growing cost of raw materials has led to rationalisation within the industry, and it is thought that this situation is likely to continue in the short to medium term.

2.6. Distribution channels

The past decade has seen the distribution chain evolve to reflect a maturing market, and AMA Research reports that product design, quality and manufacturing standards have all improved significantly, with the most recent trend being towards separation of the manufacturing and installation operations. Companies are now offering a wider range of products, with conservatories and roofline products in particular offering replacement window companies the opportunity to offset a declining window market.

Retro-fit and replacement windows are installed primarily by specialised installers and home improvement companies (which include the direct-sell sector), as well as, to a lesser extent, smaller builders. These specialised installers may either be part of a large vertically integrated group which manufactures their own products in-house, or they may buy them from window fabricators who supply made-to-measure products. The small independents, in particular small builders rather than specialist installers, usually acquire their products via DIY chains, as do the majority of DIY enthusiasts.

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These findings are discussed in more detail in the following sections.

3. THE MACRO ENVIRONMENT: POLITICAL, ECONOMIC, SOCIAL AND TECHNOLOGICAL BACKGROUND

3.1. Political and legal background

Government policy

Due to agreements and commitments arising from the Kyoto Protocol, government bodies at a European, national and local level have set targets to reduce CO_2 emissions at an industrial and domestic level. Domestic energy usage and the energy efficiency of dwellings are subject to a number of initiatives from the European Union (through various directives such as the Energy Performance of Buildings Directive, Eco-design of Products Directive and the Boiler Efficiency Directive).

The UK and other EU member states have introduced legislation and other initiatives in response to these directives. The UK government's Energy White Paper ('*our energy future – creating a low carbon economy'*) was published in 2003 and sets out the long-term strategic vision for energy policy. The focus is on energy efficiency as the most cost-effective way of meeting the UK's target for a 60% reduction in carbon emissions by 2050 with significant progress by 2020. '*Energy Efficiency: The Government's Plan for Action'* (published in 2004) outlines how the government's energy strategy will be delivered in England. The immediate target is to reduce carbon emissions by over 12m tonnes per year by 2010.

In March 2007 the draft *Climate Change Bill* set a series of five-yearly 'carbon budgets' in the period 2008 to 2050, in order to monitor progress in achieving the above targets.

To help individuals to meet the targets on energy saving and efficiency, the UK government has launched a number of initiatives. These take the form of the establishment of standards and regulations, the provision of guidance and the giving of financial support to homeowners through grants.

Regulations

The key legislation introduced by the UK government relating to domestic energy efficiency takes the form of building regulations. Although the broad regulations are consistent across the UK, the specific regulations and timing of introduction often vary by devolved administration (England, Wales, Scotland and Northern Ireland).

Regulation	Objective
Building Regulations Part L (England and Wales) 2006	Building Regulations Part L relates to the conservation of fuel and power and aims to achieve a 20% improvement in the energy efficiency of new buildings. The regulations include improved energy efficiency requirements for refurbishments and extensions of existing buildings. Since April 2005 virtually all gas boilers installed in dwellings in England and Wales must be A or B rated condensing boilers (there are limited exceptions).
Revisions to Building Regulations Part J (Scotland) 2004	In 2006 changes to the regulations included a section on Energy Standards with proposals for compliance with the EU Energy Performance of Buildings Directive to be implemented in May 2007.
Revisions to Building Regulations (Northern Ireland) 2000 Part F	Revisions were published in August 2006 and came into effect in late 2006. These include a requirement for higher thermal standards for buildings, reducing carbon emissions by up to 40%.

Information on other legislation, such as the Housing Act 2004 and Home Energy Conservation Act (HECA) 1995, can be found on the Energy Efficiency Partnership for Homes website (www.eeph.org.uk).

Other government policies and initiatives

In addition to building regulations, there are a number of other government policies and initiatives that influence the building fabric and domestic energy efficiency. These include the following.

Initiative	Objective
Energy Efficiency Commitment (EEC)	The existing flagship instrument to improve energy efficiency in the domestic sector. The EEC imposes a statutory obligation on the majority of energy suppliers to promote energy efficiency measures directed at householders.
Decent Homes	The government aims to make all council and housing association dwellings decent by 2010 i.e. warm, weatherproof and with reasonably modern facilities. The Decent Homes initiative is not designed specifically to improve energy efficiency but includes a thermal comfort criterion and so impacts on energy performance.
Warm Front (England and Wales)	Warm Front provides a package of insulation and heating improvements up to the value of £2,700 (or £4,000 where oil central heating is recommended). It is a government funded scheme available to householders who are in receipt of certain income related and disability benefits and who own their own home or rent it from a private landlord.
Warm Deal (Scotland)	Warm Deal provides a package of home insulation measures worth up to £500. The package includes measures like cavity wall insulation, loft, tank and pipe insulation, draught proofing and energy advice.
Energy Performance Certificates (EPCs)	Will be required on sale or rent of buildings. They will give potential buyers or tenants information on the current performance of a dwelling.
Code for Sustainable Homes	A voluntary code for housing developers in England and Wales stipulating energy and water efficiency requirements and ranking of dwellings accordingly.
Market Transformation Programmes (MTP)	Funded by the Department for Environment, Food and Rural Affairs (DEFRA), MTP supports policies and the delivery of programmes that encourage competition and innovation in the environmental performance of traded goods and services. MTP also facilitates the delivery of effective Europe-wide standards for energy labelling, mandatory energy efficiency requirements and voluntary industry agreements.
Low Carbon Buildings Programme (LCBP)	The government's key tool for the delivery of the *Micro-generation Strategy*, published by the Department of Trade and Industry (DTI) in March 2006. The Micro-generation Strategy is designed to support the introduction and use of micro-generation energy sources in UK homes. The UK-wide LCBP was launched in April 2006 and provides grants for the installation of micro-generation technology.

Policies and initiatives again can vary between the devolved administrations.

As before, further information on these and other initiatives can be found on www.eeph.org.uk.

Government also has an indirect influence on the environmental impact of housing through its overall housing policy and economic policy (the setting of interest rates, for example) and the planning policy framework.

Government departments

The table below shows the key UK government departments responsible for policy, regulations and other initiatives relevant to the energy efficiency of housing.

Department	Main responsibilities	Website
Communities and Local Government Department	Formerly the Office of the Deputy Prime Minister – responsible for house building strategy and building regulations	www.communities.gov.uk
Department of Trade and Industry (DTI)	Responsible for regulation of trade and industry and for energy supply	www.dti.gov.uk
Department for Environment, Food and Rural Affairs (DEFRA)	Delivers policy on housing and energy efficiency Funds the Market Transformation Programme	www.defra.gov.uk
Local government planning departments / the Planning Inspectorate	Responsible for processing planning applications, enquiries into local development plans, etc.	www.planning-inspectorate.gov.uk

HM Treasury is also a key government body in terms of the provision of funding or the introduction of legislation. For example:

- **Reduced VAT**: since 1998 the government has offered a reduced rate of VAT (5%) for micro-renewable technologies and energy-saving materials to encourage investment in domestic energy efficiency, extended to cover micro-CHP and air source heat pumps in the 2005 budget.
- **Tax relief for double glazing**: In April 2001 a concession allowing landlords to offset general refurbishments at their properties against tax was abolished, allowing them to claim for repairs only. Under the rules, double glazing was initially classified as a home improvement/refurbishment, and thus did not qualify for tax relief. A tax case forced the Inland Revenue to change its mind, with the result that, since then, double glazing has qualified for tax relief.
- **Landlord Energy Savings Allowance (LESA):** the LESA was introduced in 2004 to provide private landlords with relief on capital expenditure for installations of loft and cavity wall insulation in rented accommodation.

In addition to these government departments, a number of not-for-profit bodies have a specific remit to promote domestic energy efficiency, notably the Energy Saving Trust (EST) and the Energy Efficiency Partnership for Homes (EEPH), the sponsors of this report.

For further information on political and legal background:
Communities and Local Government (www.communities.gov.uk)
DTI (www.dti.gov.uk)
DEFRA (www.defra.gov.uk)
Energy Efficiency Partnership for Homes (www.eeph.org.uk)
Energy Saving Trust (www.energysavingtrust.org.uk)

3.2. Economic and demographic trends

Economic factors

The domestic glazing sector, together with other sectors relating to the energy efficiency of housing, is heavily influenced by macro-economic factors, notably the health of the economy, the general performance of the housing market and consumer confidence and spending.

As of the end of 2006 the UK economy was in good health, as demonstrated by the following key indicators.

UK economy – key indicators 2006

Indicator	Performance
Gross Domestic Product (GDP)	UK GDP stood at £1.3tn in 2006. Growth has averaged 2.3% per annum since 2000, out-performing other EU economies. GDP growth was under 2% in 2005 but rose to 2.7% in 2006. Annual growth of 2.5% is predicted in 2007 and 2008. Growth is driven by service sectors and there has been little growth in manufacturing.
Inflation	Annual inflation stood at 2.6% in 2006 although that figure has risen to 3% at the start of 2007, as measured by the consumer price index (CPI).
Employment	Unemployment fell at the end of 2006 to 1.67m, or 5.5% of the eligible population. Unemployment levels have been relatively low and are forecast to remain so.
Interest rates	After years of low interest rates the current trend seems upwards with rates at 5.25% in January 2007 with further rises predicted.

Source: Office for National Statistics / PriceWaterhouseCoopers

Consumer spending and confidence are crucial to the sector – both have been strong in recent years based to a significant degree on the strength of the housing market. Some analysts are predicting an end to consumer-driven growth in 2007, due to unsustainable property price rises and the increase in consumer debt, which reached £1,286bn in 2006.

Demographic trends

Demographic trends also have a large impact on energy emissions from homes. In 2006 the U.K population stood at approximately 60.5m, with England accounting for 84% of that figure.

UK population trends and forecasts (millions)

Year	England	Wales	Scotland	N. Ireland	All UK
1986	47.2	2.8	5.1	1.6	56.7
1991	47.9	2.9	5.1	1.6	57.4
1996	48.5	2.9	5.1	1.7	58.2
2001	49.5	2.9	5.1	1.7	59.1
2006	**50.7**	**3**	**5.1**	**1.7**	**60.5**
2011	52	3	5.1	1.8	61.9
2016	53.3	3.1	5.1	1.8	63.3
2021	54.6	3.2	5.1	1.8	64.7
2026	55.8	3.2	5.1	1.9	66

Source: ONS / Department of Communities and Local Government's 'Housing Statistics 2006'

The UK population is estimated to have grown by 7% between 1986 and 2006 at an average annual growth rate of 0.3%. It is forecast to grow by a further 9% in the next 20 years through natural growth (the number of births exceeding the number of deaths) and also through net immigration. The UK population is expected to peak in the middle of this century although long-term predictions are uncertain. England accounts for most of the population growth.

Another key trend is that the population is ageing. The percentage of people over 65 is set to increase from 16% in 2006 to 23% by 2031.

In addition, the number of single-occupant households is rising due to increasing divorce rates and the fact alluded to above that the population is ageing over time. In 2006 the average GB household size was 2.3 people, down from 2.55 in 1986. That figure is expected to drop to 2.1 by 2026.

Average household size (GB only)

	1986	1991	1996	2001	2006	2011	2016	2021	2026
Ave. people per household (GB)	2.55	2.45	2.4	2.36	2.3	2.24	2.18	2.13	2.1

Source: ONS / Department of Communities and Local Government's 'Housing Statistics 2006'

This in turn impacts on the types of dwelling required and the energy usage within those dwellings.

For further information on economic and demographic trends:
Communities and Local Government (www.communities.gov.uk) - specifically *Housing Statistics 2006*
Office for National Statistics / ONS (www.statistics.gov.uk)

3.3. Social and cultural context

Social and lifestyle factors have a significant impact on the energy efficiency of UK housing.

The housing stock

In 2006 there were estimated to be just over 26m dwellings in the UK, 83% of which are in England, 5% in Wales, 9% in Scotland and 3% in Northern Ireland.

The UK housing stock has grown by 4.5m in the last 20 years, and is forecast to grow by another 4.3m in the next 20 years, taking the housing stock up to just over 30m by 2026.

UK housing stock trends and forecasts (millions)

Year	England	Wales	Scotland	N. Ireland	All UK
1986	18.1	1.1	1.9	0.6	21.7
1991	19.2	1.1	2	0.7	23
1996	19.7	1.2	2.1	0.7	23.7
2001	20.5	1.2	2.2	0.7	24.6
2006	**21.8**	**1.3**	**2.4**	**0.7**	**26.2**
2011	22.6	1.3	2.4	0.8	27.1
2016	23.7	1.4	2.5	0.8	28.3
2021	24.8	1.4	2.5	0.8	29.5
2026	25.7	1.5	2.5	0.8	30.5

Source: ONS / Department of Communities and Local Government's 'Housing Statistics 2006'

The energy efficiency of a dwelling varies by *type of building* and there have been significant changes in the types of building being provided. In 2006 an estimated 21% of new builds are detached properties, almost half the level recorded in 2002. On the other hand, flats and maisonettes represent almost half of new builds compared to 31% in 2002.

UK new housing builds by type of dwelling

Type of dwelling	2002	2003	2004	2005	2006
Detached	38%	31%	27%	22%	21%
Semi-detached	14%	13%	13%	14%	13%
Terraced	18%	19%	18%	19%	18%
Flats and maisonettes	31%	36%	42%	45%	48%
	100%	100%	100%	100%	100%

Source: ONS / Department of Communities and Local Government's 'Housing Statistics 2006'

There is also a correlation between energy efficiency and *age of dwelling*.

UK housing stock by age of dwelling 2006

Year	England	Wales *	Scotland *	N. Ireland *	All UK
Pre-1919	19%	34%	18%	18%	20%
1919-1944	19%	12%	14%	11%	18%
1945-1964	22%	15%	24%	20%	22%
1965-1984	26%	23%	26%	25%	26%
1985+	14%	15%	18%	27%	15%
Total	100%	100%	100%	100%	100%

Source: ONS / Department of Communities and Local Government's 'Housing Statistics 2006' / Welsh Assembly / Scottish House Condition Survey / Northern Ireland Housing Executive

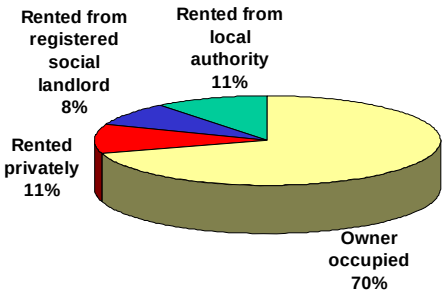
** Indicates our estimates where year ranges given in official statistics do not correspond*

Across all of the UK, therefore, 38% of the housing stock is estimated to have been built before 1945 and is therefore at least 60 years old. This fact has significant implications on energy efficiency as, broadly speaking, the older a property is the less energy efficient it is. There are some variations by country, with Northern Ireland tending to have the newest housing stock (72% built since 1945) and England and Wales the oldest stock (only 60% built since 1945).

Another key factor is *home ownership*. There has been a significant increase in owner-occupiers in the UK in recent years. The number of homeowners has risen by more than two million since 1995 to a point where they make up 70% of the UK's 26 million homes.

UK housing stock (m dwellings)

UK Housing Stock 2005 (m dwellings)



UK Housing Stock over time (m dwellings)

	1995	2000	2005
Owner occupied	16.2	17.4	18.4
Rented privately	2.5	2.5	2.8
Rented from registered social landlord	1	1.5	2.2
Rented from local authority	4.7	3.9	2.8
Total dwellings	**24.3**	**25.3**	**26.2**

Source: ONS / Communities and Local Government – 'Housing Statistics 2006'

The number of people renting privately has remained stable, although there has been a fall in the number renting from local authorities. There has been a reduction in the number of council properties being built by local government with housing associations playing a greater role in providing social housing.

Percentage of dwellings double glazed, by dwelling tenure

('000s)

Type of occupation	No double glazing	Less than half	More than half	Entire house	Total
Owner occupied	13.2	9.0	21.7	56.1	15,201
Private rental	36.5	13.3	14.5	35.7	2,205
Local Authority	30.1	10.7	11.7	47.5	2,457
Registered social landlord	18.6	7.2	14.2	60.0	1,621

Source: Energy Use in Homes, DEFRA, Building Research Establishment, Energy Saving Trust

Property value

The value of UK houses has increased dramatically in the last ten years from an average of £65,644 in 1995 to an average £190,760 in 2005.

UK average house prices

Year	England	Wales	Scotland	N. Ireland	All UK
1995	£68,066	£52,978	£53,143	£42,810	£65,644
2000	£106,998	£72,285	£69,961	£72,514	£101,550
2005	£202,409	£149,979	£129,631	£129,229	£190,760

Source: ONS / Department of Communities and Local Government's 'Housing Statistics 2006'

As a result of increasing house values householders find themselves with significant equity in their homes, something that has helped to fuel consumer spending, in particular on home improvement.

A full analysis of population and housing trends can be found in the report '*Housing Statistics 2006'* on the Communities and Local Government website (*www.communities.gov.uk*).

For further information on social and cultural context:

Building Research Establishment (www.bre.co.uk/housing) - *Domestic Energy Fact File* and *English House Condition Survey 2005*

Communities and Local Government (www.communities.gov.uk) - specifically *Housing Statistics 2006*

Communities Scotland (www.communitiesscotland.gov.uk) - *Scottish House Condition Survey*

Northern Ireland Housing Executive (www.nihe.gov.uk) - specifically the *NI Home Energy Conservation Report*

Office for National Statistics / ONS (www.statistics.gov.uk)

Department for the Environment, Food and Rural Affairs / DEFRA (www.defra.gov.uk) - specifically the *Domestic Energy Fact File*

Welsh Assembly housing statistics (www.statswales.wales.gov.uk)

3.4. Technological and environmental factors

Energy consumption

The Market Transformation Programme (MTP) estimates that energy consumption in the UK for all applications (excluding some minor uses as indicated below) was just under 500,000 Gwh in 2005. Of that total consumption, over 80% is accounted for by heating.

Energy consumption (Gwh) 2005

Application	Gwh consumed	% of all energy usage
Cold – fridges and freezers	16,243	3%
Cooking	20,668	4%
Lighting	17,267	3%
ICT	9,574	2%
Electronics	16,066	3%
Heating (gas and oil only) **	403,257	81%
Wet (dishwashers, washing machines, etc.)	13,756	3%
Total domestic consumption *	496,831	100%

Source: MTP

** all usage excludes some applications e.g. games consoles, electric toothbrushes (estimated at 5% of total domestic usage)*
*** Heating figure excludes electric heating (estimated at 20% of consumption)*

MTP estimates that energy consumption has doubled over the last 25 years, as indicated below.

Energy consumption (Gwh) 1980-2005

Application	1980	2005	% change
Cold – fridges and freezers	12,334	16,243	+32%
Cooking	23,163	20,668	-11%
Lighting	13,812	17,267	+25%
ICT	0	9,574	n/a
Electronics	4,462	16,066	+260%
Heating (gas and oil only)	182,651	403,257	+121%
Wet (dishwashers, washing machines, etc.)	6,405	13,756	+115%
Total domestic consumption *	242,827	496,831	+105%

Source: MTP

** all usage excludes some applications e.g. games consoles, electric toothbrushes (estimated at 5% of total domestic usage)*
*** Heating figure excludes electric heating (estimated at 20% of consumption)*

Whereas energy consumption for cooking as decreased and consumption for lighting has only increased slightly, consumption for other applications has increased dramatically. This is particularly the case for ICT (more or less from a standing start) and consumer electronics.

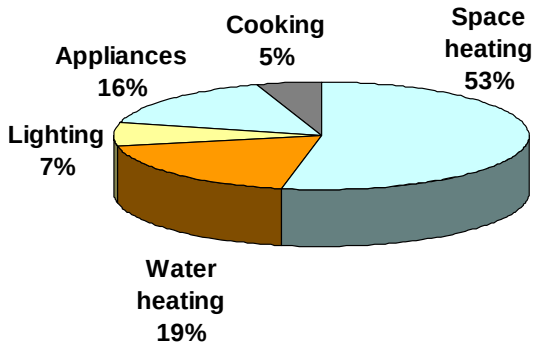
Carbon emissions

Just over 150m tonnes of carbon (MtC) were produced in the UK in 2004. Emissions from the domestic building stock were responsible for 41.7 MtC, equivalent to 27% of all carbon emissions. Although carbon emissions have fallen since 1990, to meet government targets annual domestic emissions have to fall to 17MtC by 2050 to reach overall carbon emission targets (*UK Climate Change Programme 2006, DEFRA*).

Building regulations have raised the energy efficiency of new builds so that standards in 2006 are estimated to be 25% higher than in 2002 and 70% higher than in 1990. However, new builds represent only 1% of the housing stock each year with the majority of the housing stock built to lower standards of energy efficiency. The existing stock therefore accounts for the majority of carbon emissions from dwellings.

To meet government targets for a reduction in carbon emissions, it is essential to reduce emissions from space and water heating, which together account for 72% of household emissions, as indicated below.

Domestic carbon emissions 2005



Sources: DTI - Meeting the Energy Challenge 2006 / Communities and Local Government - Review of Sustainability of Existing Buildings Nov 2006

However it is also important to address the other sources of domestic carbon emissions.

SAP ratings

The energy performance of dwellings is measured using the Standard Assessment Procedure (SAP) which measures the fuel efficiency of heating systems and the thermal efficiency of buildings (how well they retain heat). The SAP rating can be influenced by the installation of new, more energy efficient boilers, draught proofing and insulation, but there remains a close correlation between the SAP rating of a dwelling and its age, type and size. Broadly speaking the older the dwelling the lower the SAP rating (i.e. the less energy efficient it is), despite widespread renovation and improvement of older houses.

Technology

There have been considerable technological developments in the building materials used for house building and RMI (repair, maintenance and improvement), and the equipment used within homes (heating, brown and white goods). These developments have been driven in part by the requirement to be environmentally friendly and energy efficient.

Among the key technological developments are:

- A trend towards using more energy efficient building materials and insulation, glazing etc.
- A trend towards greener technology for space and water heating, such as more energy efficient condensing boilers
- More integrated systems with more sophisticated controls

Energy suppliers

Energy suppliers are important to the lighting sector as they provide the majority of the electricity to power the lighting products and systems. Six suppliers, who together make up around 98% of the total, dominate the UK electricity and gas markets. The sector witnessed enormous change after de-regulation in the 1990's with companies offering both gas and electricity. Takeover and merger activity has transformed the sector with European energy companies establishing a strong presence in the UK.

Energy suppliers

Company	Details
British Gas	Now owned by Cenrica. The company now has just under half of the UK Gas market and approximately one fifth of the electricity market (www.house.co.uk)
Powergen	Now part of German e-on Group. One of the leading suppliers of electricity in the UK with approximately one fifth of the market. Also has around 15% of the gas market (www.powergen.co.uk)
Scottish Power	Has around 10% of the gas market and approximately 12% of the UK electricity market (www.scottishpower.co.uk)
EDF Energy	French company has expanded operations in the UK and now has around 12% of the electricity market and 5% of the gas market (www.edfenergy.com)
Scottish & Southern Energy	Has around 15% of the electricity market and approximately 10% of the UK gas market (www.scottish-southern.co.uk)
nPower	Owned by Germany's RWE Group with around 15% of the electricity market in the UK and around 10% of the gas market (www.npower.com)

Sources: company websites / Ofgem / UK Climate Impacts Programme

The electricity and gas sectors have witnessed a considerable customer churn in recent years making accurate measurement of market share difficult.

Energy companies have increasingly developed a more positive attitude towards energy efficiency and the volume of CO_2 emissions to the point where they have even undertaken marketing promotions to encourage lower energy consumption.

Micro-generation

Micro-generation (or 'home power generation') refers to the stand alone, small-scale generation of low carbon heating and electricity. The main technologies are as follows:

Technology	Description
Solar	Solar PV (photovoltaic) uses the sun's energy to create electricity to run appliances and lighting and to heat water. With the solar option no greenhouse gases are released and carbon dioxide emissions are low. It is estimated that the solar option can save about a third of an average family's electricity.
Small wind turbines	Energy can be generated within a home with small wind turbines. Wind turbines provide clean power generation although they work less well where there is little wind (urban and low locations).
Biomass	Also referred to as bioenergy or biofuels, biomass is the burning of organic matter, such as plants or agricultural waste, to generate energy or heat. For small-scale domestic applications fuels include biomass wood pellets, wood chips and wood logs. Biomass is a relatively clean method of energy generation as the CO_2 released during the burning is counter-balanced by the amount absorbed during the fuel's production.
Geothermal	Geothermal energy generation utilises the natural heat of the earth, which a few metres down maintains a heat of 11-12C. The earth's heat can be utilised through technologies such as ground source heat pumps, by which a coil is fed into the earth and heat transferred from the ground into the building to produce heating and hot water.

Further information on micro-generation, including other technologies available, can be found on the DTI website (at http://www.dti.gov.uk/files/file27578.pdf).

In early 2006 there were estimated to be 82,000 micro-generation units installed in the UK and demand is increasing. A 2005 study commissioned by the Energy Saving Trust indicated that by 2050 micro-generation could provide 30-40% of the UK's electricity needs and help reduce annual household carbon emissions by 15%.

The government, through the DTI's low carbon buildings programme, provides grants for micro-generation technologies, offering up to 30% of the costs. To qualify for a grant, a homeowner has to demonstrate that energy saving light bulbs are already used throughout the house, there is a thermostat on the heating system and there is sufficient loft and cavity insulation.

A key advantage of micro-generation over traditional power provision from central power stations is energy efficiency: thermal power stations are inherently inefficient and a significant proportion of the energy is lost in the form of heat.

For further information on technological and environmental factors:

Communities and Local Government (www.communities.gov.uk) - *Review of Sustainability of Existing Buildings 2006*

DTI (www.dti.gov.uk)

DTI Low Carbon Buildings Programme (www.lowcarbonbuildings.org.uk)

Energy Efficiency Partnership for Homes (www.eeph.org.uk)

Energy-saving Trust (www.est.gov.uk)

4. THE MICRO ENVIRONMENT: THE UK DOMESTIC GLAZING SECTOR

4.1. Market size and key segments

In their latest report on UK Residential Energy Efficiency published in January 2007, MBD estimates that the UK's double glazing sector, encompassing domestic windows, doors and conservatories, reached an estimated £3.8bn in 2006.

The largest element of the market is accounted for by **windows and frames**, which are currently valued at around £2bn; in part reflecting the importance of the replacement market (where prices include installation).

The window market in new build has been in decline since 1997, and with building legislation that now makes the use of double glazing in most new homes compulsory, most of the current sales are for replacement windows or retro-fits. Information from the Energy Efficiency Partnership for Homes (EEPH) website indicates that some 9.5 million windows are replaced each year in the UK.

Doors – the only sub sector showing some growth since 2003 – reached a value of £786m in 2006, and **conservatories** just over £1.0bn.

Product segmentation of the UK domestic double glazing market 2002-2006
(Including doors, door frames, windows, French windows, window frames and conservatories)

(£ million at manufacturers' selling price (MSP) and installed value for replacements)

Description	2002	2003	2004	2005	2006
Windows	1,986	2,096	2 ,045	2,019	2,043
Doors	631	687	729	742	786
Conservatories	1,005	1,116	1,094	1,040	1,020
Total	**3,622**	**3,900**	**3,867**	**3,800**	**3,849**

(Note: numbers may not add due to rounding) *Source: MBD and Trade Estimates*

Palmer Market Research estimates the size of the market in 2006 in units to be 9.2 million windows, and 1.99 million doors. (See table below)

Product segmentation of the UK domestic glazing market 2002-2009
(units)

Description	2002	2003	2004	2005	2006	2007	2008	2009
Windows (million)	9.82	10.12	9.89	9.38	9.20	9.02	9.09	9.15
Doors (Million)	1.88	1.98	2.00	2.00	1.99	2.03	2.09	2.16
Conservatories (thousands)	186	205	202	185	187	196	212	229
Secondary glazing (thousands)	230	197	177	185	187	187	191	195

Source: Palmer Market Research

For further information on the glazing and residential energy efficiency market sectors:
AMA Market Research (www.amaresearch.co.uk) - *Replacement Door & Window Market 2005 (Executive Summary)*
Market and Business Development / MBD (www.mbdltd.co.uk) - *Residential Energy Efficiency 2007*

4.2. Market trends

Trends 2002 to 2006

MBD reports that sales of **windows and frames** have been erratic during the last few years, with the refurbishment sector showing signs of maturity following strong growth through most of the 1990s. The market was boosted by a buoyant construction sector during 2002 and 2003, peaking during the latter year at £2.1bn. During 2004 and 2005 the market declined by 2% and 1% respectively, reflecting a drop in consumer spending and a slowing housing market. Indications are that the market resumed growing during 2006 – albeit by just 1% – reaching £2.04bn.

The **doors** sector has shown more stable growth between 2002 and 2006, peaking at £786m in the latter year. Sales during 2006 have been driven primarily by strong builders/contract door sales, reflecting a more buoyant construction sector compared with 2005. The growth in the doors sector is also down to door replacement programmes in social housing.

Conservatories account for the remainder of the market, and sales of these products also peaked in 2003 (at £1.1bn), before declining by some 3% during 2004 and 2005. Increasing interest rates have impacted negatively on consumer spending and this trend continued during 2006, as the conservatory market declined further to £1.02bn.

Changing market share of various frame materials

Industry research indicates that while pre-finished timber window frames are still popular for new installations, the use of PVC-U, which has been increasing steadily since the mid-1980s, has now assumed the major share of the replacement window market. Timber, by comparison, is estimated to account for only around 11% of window frames. Aluminium, which is still most widely used in commercial and retail outlets, has also shown a surge of growth in terms of domestic applications, due mainly to its use in city centre apartments where commercial style products are used.

Increase in penetration

In 2004, approximately 83% of homes had some form of double glazing, and some 43% of all homes had double glazing in 80% or more rooms. The following table illustrates the increase in household penetration of double glazing from 1976 to 2004.

Double glazing ownership, 1976-2004 (No. of homes 000s)

Year	< 20% of rooms	20% - 39% of rooms	40% - 59% of rooms	60% - 79% of rooms	80% or more	Not stated	Total	Potential
1976	-	-	-	-	-	1,856	1,856	19,215
1980	-	-	-	-	-	3,926	3,926	20,010
1985	804	1,185	1,032	970	1,921	692	6,604	21,017
1990	1,096	1,424	1,270	1,758	4,470	671	10,689	22,140
1995	877	1,019	1,283	2,317	8,165	630	14,291	23,315
2000	495	598	976	2,715	9,705	3,116	17,606	24,375
2001	414	576	940	2,531	10,060	3,586	18,107	24,170
2002	416	581	948	2,551	10,145	4,322	18,963	24,365
2003	430	581	946	2,611	10,436	4,856	19,860	24,595
2004	423	574	931	2,683	10,631	5,336	20,578	24,825

Source: DTI, BRE

Rising costs leading to price pressures

Raw material and manufacturing costs have been rising steadily during the last two to three years, while ongoing price competition has depressed prices for replacement windows. Suppliers have had to absorb cost increases, which has eroded margins and resulted in considerable restructuring in the supply sector.

Market saturation

Saturation of the market is a key issue, with a very high percentage of homes in the private sector now fitted with replacement windows – although these may not necessarily be energy efficient windows. New materials and installation methods have extended the life span of window and door products, and this is likely to further inhibit replacement sales. While demand for the newest security enhanced and thermally efficient window products will indeed stimulate some sales, this emergence of what the industry has termed a 'second time replacement' market has thus far not been able to offset a natural overall decline in the market.

Forecasts

MBD believes that the total UK residential energy efficiency market, inclusive of glazing, central heating and building thermal insulation, will increase by around 10% between 2006 and 2009. This will be driven by further anticipated growth in the construction market, the Energy White Paper as well as changes in building regulations which became effective in 2006 and are expected to continue boosting the ongoing requirement for energy efficient products.

In terms of windows and window frames, the direct sales sector is forecast to continue declining in the short term. The builders or contract sector of the market, however, is expected to increase steadily until at least 2011.

Demand for doors and door frames will also continue to increase, boosted particularly by developments in the social housing sector as well as growth in the private housing market.

It is thought that the decline in the conservatories sector will probably continue in the short term; however, this sector of the market is expected to rebound in the medium to long term, i.e. towards the end of the 2010 and the beginning of 2011. There has recently been an increase in new build homes with conservatories, particularly in new housing developments, and these will help to boost the market.

The fact remains that there is still a shortage of houses. In addition, government initiatives such as the 'Decent Homes' programme to improve the standard of existing social housing by 2010 will gain momentum. Although the Decent Homes Standard does not specifically require that all existing windows be double glazed, it does stipulate that when windows are replaced they should be replaced with double glazing.

This is in line with existing building regulations, which stipulate that replacement windows in England and Wales have a BFRC Rating in band E, (or a U-value of 2.0 W/m^2K), or a centre pane U-value of 1.2 W/m^2K.

Information from Palmer Market Research and on the English House Condition Survey, indicate that four- fifths of windows in owner-occupied properties (which make up 70% of all domestic properties), have already been replaced, and 85% of homeowners think that their currently installed windows are in a good or excellent condition. However, the reasons that homeowners cite for replacing windows are changing, with consumers reported to be replacing more for aesthetic and security reasons than simply because of a poor condition of the windows, which, a decade ago, was the major reason for replacement.

In addition, a quarter of the windows being replaced (at the time of Palmer's 2005 study) were PVC-U, as opposed to only 10% in 2003. This indicates that nearly two million windows replaced during 2005 were *replacements* of replacements.

4.3. Market drivers and developments

Penetration of double glazing

A key development in the sector has been the growth in penetration of double glazing. In 1976 fewer than 10% of existing homes had double glazing in one or more rooms. In 2004, market penetration reached almost 83%.

Regulations

One of the most important drivers of change in the broader residential energy efficiency sector and hence also in the domestic glazing market is legislation in the form of building regulations, discussed in greater detail in section 3 of this report.

The most pertinent of these regulations are:

- Building Regulations 2000, Approved Document L1A, Conservation of Fuel and Power – Work in new dwellings (2006), and Approved Document L1B – Work in existing dwellings (2006)
- Building Regulations (Northern Ireland) 2000, and;
- Building Regulations (Scotland) 2004 with 2007 revisions.

These policies, as well as Scheme Development Standards (Housing Corporation) and a number of voluntary industry initiatives including the Code for Sustainable Homes, all have relevance for the double glazing sector.

New Document L of Building Regulations, which became effective in England and Wales on 1 April 2002, affects the minimum levels of insulation (u values) required for replacement windows fitted in the home. Scotland's new Building Act 1959 Technical Standards Part J came into force on 4 March 2002. Part J introduced new thermal standards for windows, doors and rooflights for all dwellings in Scotland. These standards were temporarily relaxed and fully implemented from 4 March 2003.

It is important to note that while legislation has had an impact on energy performance since 2002, over the previous 20 years where legislation was not a factor the industry achieved high levels of penetration in the private housing replacement sector. This was with windows that were considerably more energy efficient than those required under building regulations for new build over the same period.

Exceptions to Document L include:

- conservatories, provided they are separated from the rest of the building (by doors, for example) or are unheated
- historic buildings (which are expected to 'achieve the best they can'), and
- components.

(In terms of components, broken sealed units may be replaced by 'like for like', as the regulations apply to entire window replacements only.)

A self-assessment scheme called **FENSA** (Fenestration Self-Assessment) was also set up to enable companies to serve their customers without having to apply for building regulations for each separate client.

In addition to building regulations, there are a number of government policies and other initiatives that influence the uptake of energy efficient windows in the domestic sector. These include:

- **WER** (Window Energy Ratings) were launched in 2004, and provide an accessible, robust structure for measuring product improvements as well as promoting energy efficiency to consumers. WERs have grown in recognition and credibility and were included in the revisions to Part L1 of the Building Regulations (England & Wales) in 2006.
- **Energy Saving Recommendations** (ESR) for windows, launched in 2005, are on DEFRA's list of eligible measures for the Energy Efficiency Commitment (EEC), encouraging energy suppliers to promote ESR windows and enabling consumers to access discounts and favourable deals. ESR windows achieve at least a Band C rating on the WER scale (as opposed to a minimum under Building Regulations of Band E).
- **Decent Homes,** which aims to make all social housing decent by 2010 i.e. warm, weatherproof and with modern facilities. While 'Decent Homes' does not specifically require that all existing windows be double glazed, it does stipulate that all windows designated for replacement be substituted with double glazed windows.
- **Energy Performance Certificates (EPCs)**, which will be required on the sale or rent of buildings and give potential buyers or tenants information on the current performance of a dwelling.
- The **Code for Sustainable Homes**, a voluntary code for housing developers in England and Wales, which was launched in December 2006, and stipulates minimum energy efficiency requirements for the design and construction of new homes.
- **Market Transformation Programme (MTP)**, which supports policies and delivery of programmes that encourage competition and innovation in the environmental performance of traded goods and services.
- The **Energy Efficiency Commitment** (**EEC**) which imposes a statutory obligation upon electricity and gas suppliers to meet targets for promoting improvements in energy efficiency among household consumers in Great Britain through the promotion of measures such as cavity wall and loft insulation, energy efficiency light bulbs, boilers and appliances and energy saving recommended (ESR) windows.

Regulatory, certification and compliance bodies

FENSA Limited is the Fenestration Self-Assessment scheme for companies that install windows and doors in homes. All replacement window installations in England and Wales are subject to building regulations which affect, in particular, the minimum levels of insulation that replacement windows must have when fitted in the home.

Using a contractor / installer registered under the FENSA self-assessment scheme ensures that the work will be carried out in accordance with relevant regulations without inspection by the local council. The installer is required to inform FENSA once the installation has been completed and random inspections of completed work are carried out. If a FENSA registered contractor is not being used, then building regulation approval must be obtained i.e. not only will they have to confirm that the replacement will achieve the required U-values, but the relevant safety and ventilation as well as access requirements will have to be met.

BFRC, the British Fenestration Rating Council, is described as 'a collaborative venture between all stakeholders in the windows industry'. It was established in 1998 with the assistance of the Department for Environment, Transport and the Regions (DETR, now DEFRA) and the major trade associations from the window industry, with the objective of 'creating and maintaining a fair, accurate and credible rating system to impartially measure and assess the thermal efficiency of windows'.

The BFRC Window Energy Rating System helps consumers select energy efficient windows for their homes, by providing the information necessary for them to compare brands and thus make the best choice for their particular application. The rating system is recognised within building regulations throughout the UK.

Levels of construction activity

MBD reports that one of the main factors influencing demand for building thermal insulation is the level of construction activity, more specifically, new housing and RMI.

- **House building rates** - levels of new build have been small but steady in recent years although there are government assurances of future increases in house building. The DTI reports that new housing output (in volume terms) reached 303,400 during 2006.

- **Levels of Domestic RMI** (repair, maintenance and improvement) have shown steady growth since 2002 and ongoing healthy activity within this sector is crucial to the domestic glazing sector, as part of the overall home refurbishment market.

New housing output and housing RMI UK (2002-2006)
Public & private sector

Year	Output (in volume terms – '000)	Output (in value terms – £ million)	Housing RMI (in value terms – £ million)
2002	210	12,089	19,170
2003	234.6	15,362	21,315
2004	274	19,446	23,229
2005	268.7	21,063	23,937
2006 (P)	303.4	23,014	24,630

P = Provisional *Source: DTI Construction Statistics Annual Report 2006*

- **House moving rates** impact on installation of domestic glazing products (windows, doors and conservatories) as part of general refurbishment activities. Industry research has shown that 27% of replacement windows are bought within 12 months of a property move.

In addition, media focus on the climate change issue, as well as government legislation and the increasing costs of heating a home, have significantly increased awareness among consumers of the urgent need to change old patterns of energy conservation and consumption.

New research from the Energy Saving Trust (EST) has found that nearly 70% of British people believe that energy efficiency is important when buying a home. Almost half (45%) are willing to pay up to £10,000 more for an environmentally friendly home.

While only 21% consider improving the energy efficiency of their home before putting it on the market, 64% of buyers would rule out potential purchases that contained clapped-out boilers, single glazed windows and insufficient insulation.

The EST's Hidden Value Guide reports that some 18%of home buyers are put off by single glazed windows.

Housing trends

The type, style and design of houses, as well as housing density also impact upon the domestic glazing sector. Palmer Market Research reports, for example, that during 2004 the continuing fall in the new build conservatory market was in part influenced by a decline in the share of detached houses in the overall new build market. This movement away from detached houses towards private sector flats meant a further decline in the window market during 2005 and 2006 (6%). The window market is expected to decline by a further 4% in 2007.

The fall in market value of conservatories has also meant that, as a product category, conservatories have an overall market value less than that of sliding patio doors. Sliding patio doors, in turn, have regained some market share over hinged doors due to their increasing use in flats.

During the same period, aluminium frames have shown fresh growth to a fifteen-year high, mainly due to their usage in city centre apartments where commercial style products are used.

Flats accounted for 45% of housing starts in the private sector, up from 41% in 2004, and in the social sector for 49%, up from 47%. The latest statistics on new build housing show that flats' and maisonettes' share of total new build has increased further – to 45% and 48% for 2005 and 2006 respectively.

Installed glazed products in the new housing market declined in value by 3.8% in 2005 to £404 million.

4.4. Issues and developments

- **Window Energy Ratings:** Past efforts to improve the energy or thermal performance of windows have centred on reducing heat loss via measures such as double glazing and low-emissivity (low-e) glass.

  Heat losses are, however, only one aspect of thermal performance and the advent of Window Energy Ratings now allows the whole performance of windows to be easily presented to customers. Although the ratings became established fairly recently, levels of recognition are still low, and this is thought to be due to the fact that dominance of the market by smaller companies means that the understanding of ratings may take some time to filter down.

- **Other recent regulatory changes and updates** include the launch of the BFRC scheme in February 2004, which is slowly gathering industry support. In addition, the EST's publication '*Windows for new and existing housing*' (CE66) was revised in March 2006, and expressed the EST standards for windows in terms of BFRC ratings. The Building Regulations (England and Wales) were revised in April 2006, and now require:

  - replacement windows to have a BFRC rating in band E (or a U-value of 2.0 W/m^2K, or a centre pane U-value of 1.2 W/m^2K);

  - new windows in existing buildings (New windows in existing buildings, for e.g. in extensions, must have a BFRC rating in band D, or a U-value of 1.8 W/m^2K or a centre pane U-value of 1.2 W/m^2K).

  There are no technical requirements for windows in existing homes in Northern Ireland but changes in June 2006 imposed similar requirements to those in England and Wales. In Scotland, a U-value of either 2.0 or 1.8W/m2K (depending on the main heating fuel for the building) is necessary.

- **Energy Performance Certificates (EPCs):** In June 2006, the government officially launched Energy Performance Certificates (EPCs), which are mandatory for all homes with four or more bedrooms bought and sold in England and Wales (and will ultimately be for all homes). EPCs will be a key part of the Home Condition Report, which will be included in the Home Information Pack (HIP).

  The EPC will also be required for non-marketed and right-to-buy sales, as well as all lettings of existing buildings; however, it is thought that this will only be introduced in spring 2008. Since homes account for 27% of the UK's carbon dioxide emissions, the introduction of these packs has been aimed at providing consumers with user friendly information that will help them reduce both the environmental impact of their homes as well as their energy bills.

  Energy performance certificates (EPCs) provide an A to G rating for properties, reflecting their energy efficiency and carbon emissions. Details will also be provided on how consumers can improve the rating through energy efficiency measures, and the Energy Saving Trust's energy efficiency advice centre number will be provided for further information.

- **Changes for Double Glazing Tax Rules:** In April 2001, a concession which allowed landlords to offset general refurbishments at their properties against tax was abolished, allowing claims for repairs only, rather than refurbishments. Under the rules, landlords could get tax relief for repairing a broken window frame, but if that window was replaced with double glazing, it would be considered an improvement – and would not qualify. However, in 2002 a tax case forced the Inland Revenue to change its double glazing policy and it was announced that, with 'immediate effect' double glazing qualified for tax relief. The Inland Revenue's booklet IR 150 '*Taxation of rents: A guide to property income*' outlines the rules on repairs and refurbishment.

4.5. Equipment suppliers

The domestic glazing supply sector is a very fragmented one, comprised of vertically integrated glazing companies, commercial glazed door manufacturers, rooflight manufacturers, PVC-U and aluminium systems fabricators and installers, bespoke glazing contractors, steel window manufacturers as well as major joinery companies. Research indicates that there are as many as 10,000 glaziers, glazing suppliers, installers and repairers currently active in the sector.

During the past five years in particular, ongoing price pressures caused by increasing competition in a saturated and shrinking market, as well as the growing cost of raw materials, has led to rationalisation within the industry, and this situation is expected to continue in the short to medium term.

Trade and professional bodies include:

Body	Detail
ACE	Association for the Conservation of Energy (www.ukace.org)
BPF	British Plastics Federation (www.bpf.co.uk)
BWF	British Woodworking Federation (www.bwf.org.uk)
EST	Energy Saving Trust (www.energysavingtrust.org.uk)
HECA	Home Energy Conservation Association (www.hecafora.com)
GGF	The Glass and Glazing Federation (www.ggf.co.uk)
CAB	The Council for Aluminium in Building (www.c-a-b.org.uk)
SWA	The Steel Windows Association (www.steel-window-association.co.uk)
ACDM	The Association of Composite Door Manufacturers (www.acdm.co.uk)
UKTFA	UK Timber Frame Association (www.timber-frame.org)

Other organisations include:

- **The Centre for Sustainable Energy (CSE),** a national charitable company, established to engage people and communities to meet real needs for environmentally sound and affordable energy services.

- **The National Energy Foundation (NEF),** an independent educational charity whose objective is to work for the more efficient, innovative, and safe use of energy and to increase public awareness of energy in all its aspects. Currently it is working in the areas of renewable energy and energy efficiency.

4.6. Distribution channels

The past decade has seen the distribution chain evolve to reflect a maturing market, and AMA Research reports that product design, quality and manufacturing standards have all improved significantly, with the most recent trend being towards separation of the manufacturing and installation operations. Companies are now offering a wider range of products, with conservatories and roofline products in particular offering replacement window companies the opportunity to offset a declining window market.

Retro-fit and replacement windows are installed primarily by specialised installers and home improvement companies (which includes the direct-sell sector), as well as, to a lesser extent, smaller builders. These specialised installers may either be part of a large vertically integrated group which manufactures their own products in-house, or they may buy them from window fabricators who supply made-to-measure products.

The small independents, in particular small builders rather than specialist installers, usually acquire their products via DIY chains, as do the majority of DIY enthusiasts. Since replacement doors are relatively simple to hang (when compared to the installation of windows, for example), the role of DIY enthusiasts is stronger. Builders and timber merchants are thus key to this sector. Direct sales, MBD reports, also claim an element of the market especially for large-scale refurbishment.

The vast majority of retro-fit double glazing units are sold direct to the end user, and direct selling has been widely adopted for the refurbishment nature of this market. MBD believes that this has accounted for some 90% of total sales by value. However, the role of the builder in the retro-fit double glazing sector is changing with the wider adoption of such units in new constructions. Virtually all new constructions now incorporate double glazing. This has created an increasing role for specialist installers of double glazing in new constructions. A small residual of units are also sold via builders' merchants though this is not an important distribution route for double glazed items given the specialist nature of installation.

4.7. Marketing and promotions

Reflecting the high level of competition within the refurbishment and retro-fit sector, advertising – particularly of windows and conservatories – has been fairly aggressive. As indicated above, a significant percentage of all retro-fit and refurbishment sales of double glazing products have historically been accounted for by direct selling; in particular, door to door selling.

The publication of the Office of Fair Trading (OFT) doorstep selling report in May 2004 included a number of recommendations aimed at protecting consumers from salespersons in the home. In response, the government launched a public consultation, and later implemented several proposals which are thought to have been contributory factors in the subsequent slowdown of sales within the double glazed windows and conservatory market. In spite of this slowdown, AMA reported recently that the private 'direct sell' market accounted for over 60% of the replacement door and window market in 2005. It is anticipated however that the remedies recommended by the OFT will have no long term impact on window and conservatory sales.

Doorstep sales were conservatively estimated by OFT to amount to some £2.4 billion every year in the UK. Of this, double glazing doorstep sales were estimated at £1.6 billion and conservatories at £250 million. (During the consultation period representations suggested that replacement windows and doors alone could amount to around £2.5 billion, with conservatory sales amounting to a further £0.8 billion.)

The most important event for the double glazing industry is Glassex, an annual event dedicated to the glass and glazing industries. Other important trade shows, events and forums include Sustainability Live (the UK's largest forum for excellence and innovation in environment, water, land and energy), Interbuild, the National Home Energy Conference and the Homebuilding and Renovation Show.

For further information on the glazing sector:

BBC Archives - http://news.bbc.co.uk/1/hi/business/2062586.stm - *Double Glazing Tax Rules for Landlords*
BFRC window energy rating system - www.bfrc.org
Energy Efficiency Partnership for Homes - www.eeph.org.uk
FENSA - www.fensa.co.uk
Low Emissivity Glass Scotland - www.ggf.co.uk/view_doc_aps.phtml?id=71
Low Emissivity Glass England and Wales - http://www.ggf.co.uk/view_doc_aps.phtml?id=72
Market transformation programmes - www.mtprog.com/
Window energy ratings - www.energysavingtrust.org.uk - paper entitled *Windows for New and Existing Housing (CE66)*
DTI, OFT Report on Door to Door Selling (www.dti.gov.uk)