Energy Use in Homes

A series of reports on domestic energy use in England

Energy Summary Report

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This is one of a series of five reports on the energy characteristics of the stock as observed by the 2001 English House Condition Survey.

The reports in this series are:

1. Energy Summary Report
2. Space and Water Heating
3. Thermal Insulation
4. Fuel Consumption
5. Energy Efficiency

The English House Condition Survey is funded and provided courtesy of the Office of the Deputy Prime Minister. More information about this survey can be found at www.odpm.gov.uk/ehcs

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Energy Summary Report.

A SUMMARY OF THE ENERGY CHARACTERISTICS OF THE ENGLISH HOUSING STOCK AS OBSERVED BY THE 2001 ENGLISH HOUSE CONDITION SURVEY.

INTRODUCTION

This report summarises the information described by four detailed reports on energy related topics (Thermal Insulation, Space and Water Heating, Energy Efficiency and Fuel Consumption) produced using data from the 2001 English House Condition Survey (EHCS) and the subsequent meter reading survey carried out in 2003. It draws on the key analyses contained within these reports and places them within the context of the English housing stock as a whole. For the full analysis of this material please refer to the individual reports and supporting tables.

The EHCS is a five yearly survey undertaken in order to assess the condition of the housing stock in England. The results presented here are from the sections of the survey that provide information on both the dwelling characteristics and the occupants. The survey results are based upon a sample of approximately 17,500 dwellings.

The fuel consumption analysis uses meter readings from a sub-sample of 7,400 dwellings from the 2001 EHCS and follow-up readings taken in 2003.

Key energy characteristics of the housing stock.

This section outlines some of the key energy characteristics of the English housing stock.

SAP RATING.

1.1 The Standard Assessment Procedure (SAP) is the Government's recommended system for home energy rating, based on energy costs for space and water heating. SAP ratings run from 1 to 120 – the higher the number, the better the standard. The SAP ratings described in this report have been calculated using the 2001 SAP methodology.

1.2 The mean SAP rating of the English housing stock in 2001 is 50.5. Around 9% of the stock (about 2 million dwellings) have a SAP rating below 30. A further 9% have a SAP rating above 70. The distribution of SAP ratings in 2001 is shown in Figure 1.1 below.

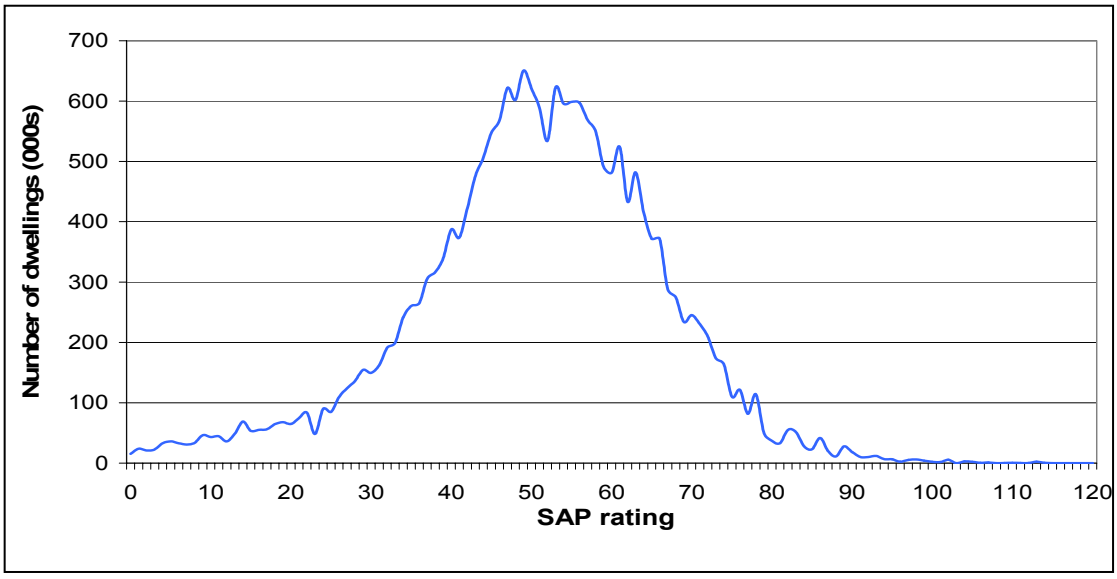

Figure 1.1 – Distribution of SAP ratings in 2001 (all dwellings).

SPACE & WATER HEATING SYSTEMS.

Approximately 86% of dwellings have central heating[1] as their primary space heating system. Around 8% have programmable[2] systems (almost exclusively electric storage radiators), 6% have fixed heaters[3] (mostly solid fuel, gas or electric fires) and less than 1% have non-fixed heaters[4] – this is shown in Figure 1.2 below.

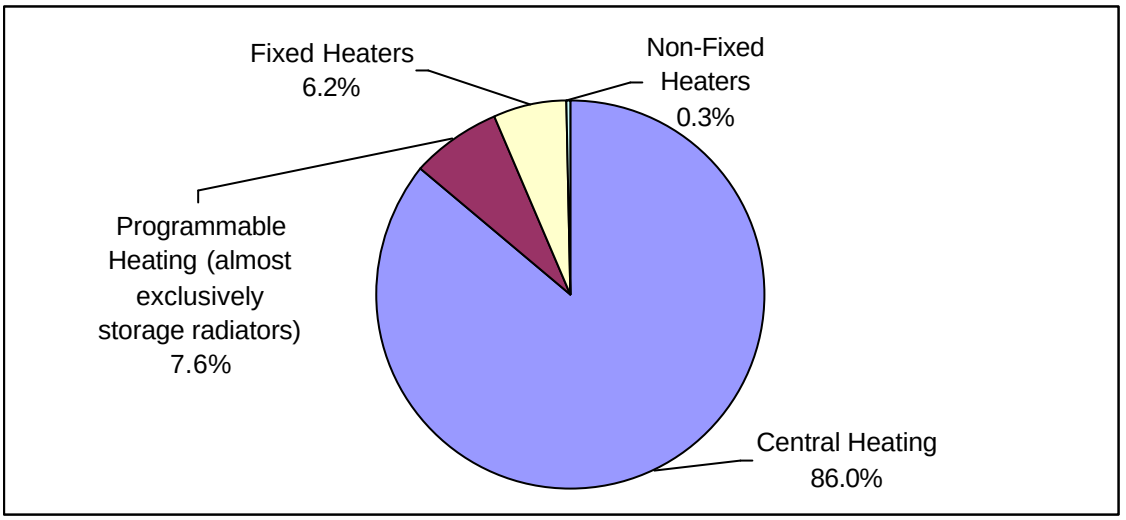

Figure 1.2 – Primary Heating Provision (all dwellings).

1.3 Over 81% of dwellings use mains gas to fuel their primary heating system. Electricity is used in about 9% of dwellings, with the remaining 10% either using other fuels (mostly fuel oil, solid fuel or LPG) or utilising communal systems.

1.4 About 85% of dwellings have the ability to heat their water in a combined central heating / hot water system. In addition, 59% of dwellings have electric immersion heaters and 14% instantaneous water heaters.

THERMAL INSULATION.

1.5 Over two-thirds of the dwellings in England are built with predominantly cavity walls (70% of the stock), with the majority of the remainder of solid wall construction.

1.6 Around 35% of dwellings with predominantly cavity walls have Cavity Wall Insulation (CWI) installed. Solid wall insulation (dry lining or external cladding to more than 50% of the wall area) is found in only 2% of dwellings with predominantly solid walls.

1.7 Only 5% of all houses and bungalows with unconverted lofts have no loft insulation, while about 26% have at least 150mm of insulation – see Figure 1.3 below.

1.8 76% of dwellings have at least one window double glazed, with 51% having full double glazing.

1.9 Almost all hot water cylinders (98%) are insulated. 57% of insulated cylinders employ a foam coating and the remaining 43% have a flexible cylinder jacket.

[1] A heating system with a distribution system sufficient to provide heat in at least one room in addition to the room or space containing any boiler.
[2] Individual room-heaters that may be automatically operated by timers – e.g. electric storage radiators.
[3] Non-portable individual room heaters not automatically operated by timers – e.g. a solid fuel fire.
[4] Portable individual room heaters not automatically operated by timers.

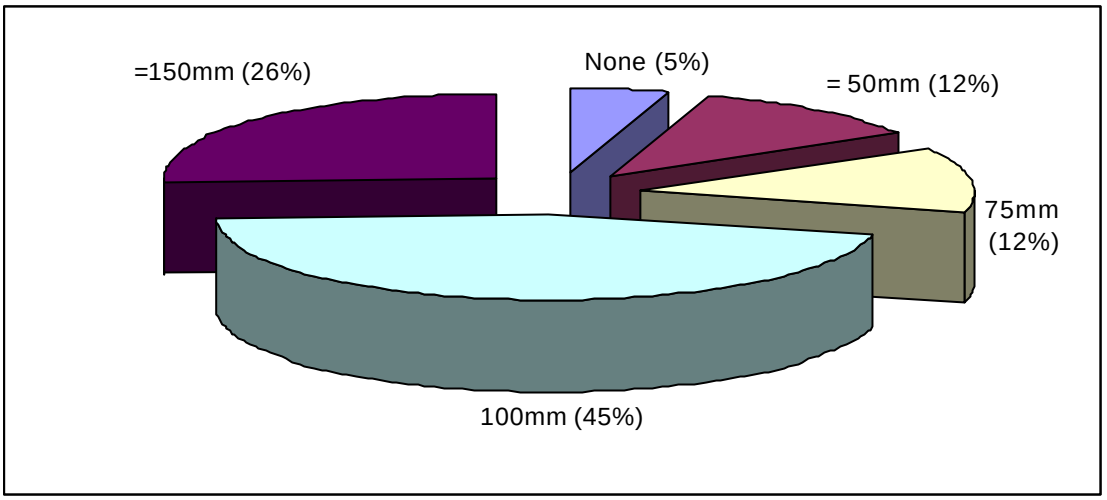

Figure 1.3 – Thickness of loft insulation (in all houses and bungalows with unconverted lofts).

FUEL CONSUMPTION.

1.10 The mean measured annual gas consumption (of all households with a gas supply) is around 19,800 kWh per household. The mean electricity consumption of all households, including electric heating, is around 5,300 kWh per household.

1.11 The total gas consumption for England is approximately 1,270 PJ and electricity consumption is about 390 PJ.

Energy breakdown of the housing stock.

This section breaks down the energy characteristics of the stock by the physical characteristics of the dwelling and socioeconomic characteristics of the occupying household.

DWELLING AGE.

2.1 The oldest dwellings (built before 1919) have the lowest mean SAP in the stock (SAP = 41). 20% of these dwellings have a SAP less than 30. These dwellings are typically of solid wall construction – a wall type with poor thermal properties. A high proportion cannot benefit from the addition of CWI, and even those dwellings with cavity walls are less likely than average to have the cavity filled (only 13% of pre-1919 cavity walled dwellings have CWI). Dwellings in this age band also show a decreased presence and thickness of loft insulation compared to newer houses, with over 14% of pre-1919 dwelling having no loft insulation. Pre-1919 dwellings are less likely to have central heating, and more likely than average to rely on fixed room heaters for their primary heating.

Energy efficiency improves for more recent dwellings. Cavity wall construction methods are more prevalent, central heating more popular and insulation levels increase. Fuel consumption is lower in younger dwellings, and SAP ratings higher. A breakdown of SAP ratings by dwelling age is shown below in Figure 2.1.

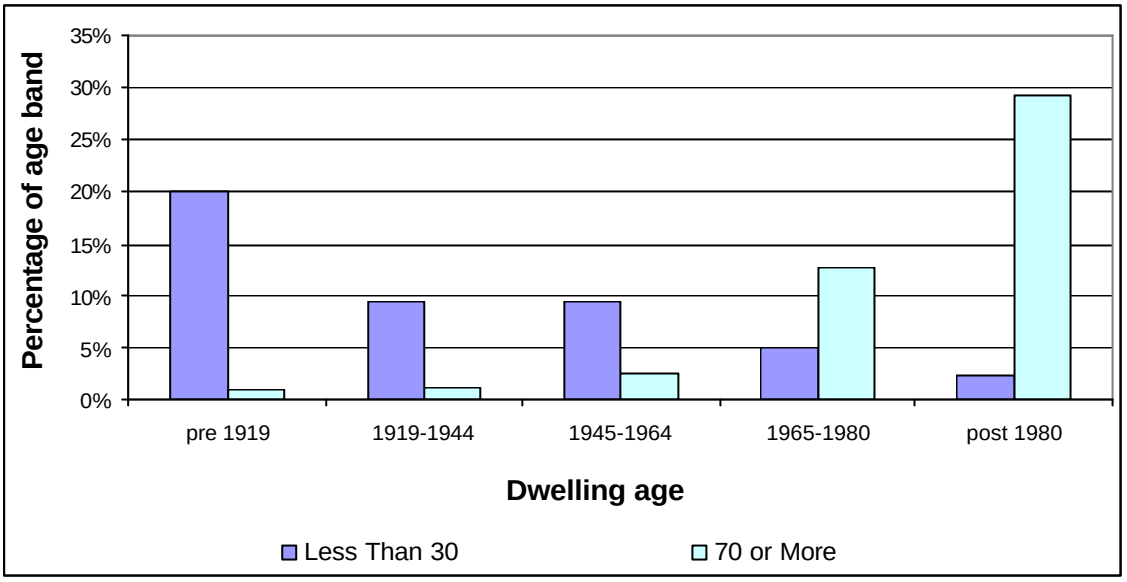

Figure 2.1 – SAP ratings below 30 and above 70 by age of dwelling (all dwellings).

Inter-war (1919-1944) dwellings have a mean SAP rating of 46, a considerable improvement on the pre-1919 stock although still below the whole stock average. Central heating is common among this group (present in 89% of inter-war dwellings), and fixed heaters and programmable heating systems are correspondingly less prevalent. Loft insulation levels increase (although 6% of this group remain without any loft insulation) and those dwellings with cavity walls are more likely to be insulated with CWI.

The 1945-1964 stock shows a further improvement in energy efficiency. These dwellings are now dominated by cavity wall construction methods acting to increase SAP ratings (mean SAP of this group is 48), and CWI is now found in around 30% of eligible dwellings. Loft insulation in the 1945-1964 band shows a further improvement on the pre-war stock with only 3% of houses and bungalows having no insulation present, and 28% having 150mm or greater thickness. The level of central heating within this group drops slightly to around 87% when compared to the 1919-1944 stock, in favour of programmable systems. We can associate this with the large number of purpose built flats erected in this period which did not have central heating systems installed.

Energy efficiency improves further in the 1965-1980 stock which has a mean SAP of 55. 92% of these dwellings are of cavity wall construction, 31% of which have CWI installed. The proportion of houses and bungalows with 150mm or more of loft insulation drops slightly to around 21% - perhaps indicating lower take up of retrospective loft insulation within this group. Levels of central heating increase to 89%, as do levels of programmable systems (8%), both at the expense of fixed heater systems (which are the primary heating provision in only 2% of this age band).

Post 1980 dwellings are unsurprisingly the best performing of the entire stock. With almost exclusively cavity wall construction and high levels of insulation throughout, the average SAP rating of this group is over 60. CWI is present in 57% of the stock with cavity walls in this age band and 150mm or greater of loft insulation is found in around 38% of post 1980 houses and bungalows. Central heating systems drop from the 1965-1980 level to 83% of dwellings as programmable systems become increasingly popular (15% of dwellings).

DWELLING TYPE.

HOUSES

2.2 All house types (excluding bungalows) have an average SAP rating between 48 and 51, with between 9% and 11% of all house types having a SAP less than 30. The percentage of dwellings in the highest SAP band (SAP >70) ranges from 4% for semi-detached houses to 10% for small terraced houses. Almost all detached houses have central heating (97%), as do a high proportion of semi-detached and medium/large terraced houses (90% and 88%). Small terraced houses have a lower incidence of central heating (78%) and are more likely to use fixed heaters for their primary space heating needs (14%). They are also more likely to rely on immersion heaters for their water heating needs than other house types (15% of small terrace houses have only an immersion heater available to heat water). Measured gas and electricity consumptions reflect the energy efficiency of each dwelling type, as shown in Figure 2.2 below.

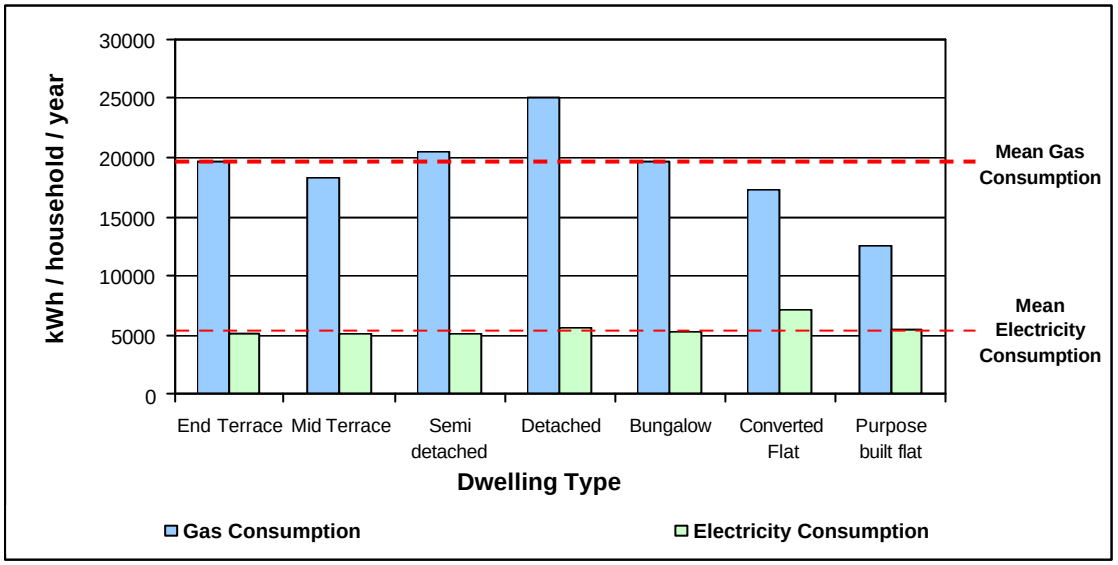

Figure 2.2 - Mean gas and electricity consumptions by dwelling type (all dwellings).

BUNGALOWS.

Bungalows perform fairly poorly overall, largely associated with the greater external envelope of this dwelling type. The mean SAP rating of bungalows is 46, with 11% of this dwelling type having a SAP below 30 and less than 2% of bungalows having a SAP rating above 70. The vast majority of bungalows (87%) are of cavity wall construction, a high proportion of which are insulated (43%). Loft insulation levels are also slightly higher than average. Central heating is at above average levels in bungalows (89%) with programmable systems making up the majority of the remainder (9%).

FLATS.

When we consider flats there is a clear difference between the energy efficiency of purpose built flats and that of converted flats. The different mean SAP ratings shown by the different flat types are shown below in Figure 2.3.

Overall purpose built flats perform well in terms of energy efficiency, partly because they exhibit lower levels of heat loss than houses due generally lower external wall areas. Low-rise purpose built flats perform particularly well - this dwelling type has an average SAP rating of 61. 82% of low rise purpose built flats are of cavity wall construction, and 37% of these have CWI installed. Central heating is much less common in all flats compared to houses and bungalows. 72% of low rise flats have central heating installed, with 21% using a programmable system (almost exclusively electric storage radiators) for their primary space heating.

High-rise flats have a lower mean SAP of 52. In contrast to low-rise, high-rise flats are almost equally split between cavity wall construction and solid wall construction. Many of these will be solid concrete walls. Concrete walls increase heat losses, and high rise flats with cavity walls are generally unsuitable for CWI. Only 67% of high rise flats have central heating systems, with the majority of the remainder utilising a programmable system (31%). These factors are reflected in the lower SAP ratings seen in this group.

Converted flats have poor energy efficiency. The mean SAP rating of the converted flats group is just 43, with 19% of this group having a SAP rating below 30. Converted flats tend to be old and are dominated by solid walled dwellings (84% of converted flats have solid walls). Only 72% of this group have a central heating system installed, with the remainder made up of 13% programmable systems, 13% fixed heaters (typically solid fuel, gas or electric fires) and around 2% non-fixed heaters. Converted flats show high levels of measured electricity consumption (a mean of 7,100 kWh per household) reflecting the low energy efficiency of this dwelling type and the type of heating systems in use.

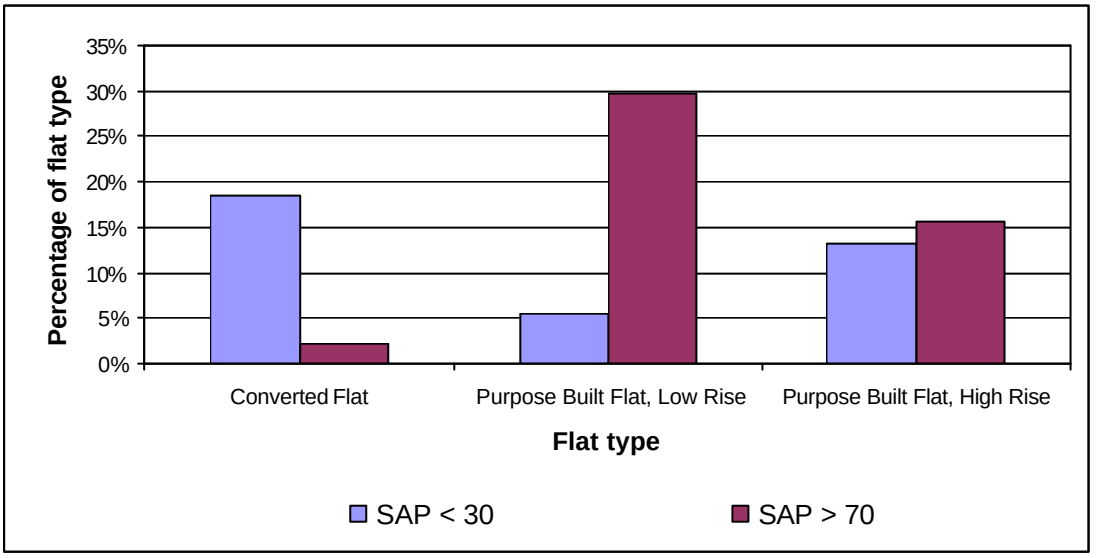

Figure 2.3 - SAP ratings below 30 and above 70 by flat type (all flats).

GEOGRAPHICAL LOCATION.

2.3 The EHCS reveals regional variations in the English housing stock – many of which we can associate with the dwelling age distribution within each region and the availability of gas. The variation in mean SAP ratings across all regions can be seen in Figure 2.4 below. This section describes the average energy efficiency of a selection of the Government Office Regions (GORs) – a fuller treatment of energy characteristics of the stock by geographical region can be found in the individual reports.

The mean SAP rating of dwellings in the North East is the highest in the housing stock (SAP = 53). A high number of dwellings in the North East are of cavity wall construction (86%) – 36% of these have CWI installed. This region shows high levels of loft insulation (30% of houses and bungalows have 150mm or more of insulation) and a high level of central heating (present in 92% of dwellings).

London is in many ways anomalous to the rest of the government regions. It is an exclusively urban region and contains a large number of flats. The housing stock in London is also considerably older on average than the other GORs. Only 43% of dwellings in London are of cavity wall construction (reflecting the age of the stock in this region), with fewer than average having CWI installed (29% of cavity walled dwellings). Loft insulation levels are also

slightly lower than average – 6% of houses and bungalows have no insulation, while only 23% have 150mm or greater of insulation. Central heating is present in around 88% of dwellings in London. Despite the lower than average levels of insulation and prevalence of solid walled dwellings, the average SAP rating in London is higher than average at around 53, reflecting the high number of flats in London which counteracts the lower energy efficiency in other areas.

Dwellings in the South-West GOR have a lower than average mean SAP rating (49). A high proportion of dwellings in this region have low SAP ratings - 15% have a SAP less than 30. The number of cavity walled dwellings in this region (71%) is around the national average, as is the proportion of these with CWI (38%). In addition, approximately 27% of houses and bungalows have 150mm of loft insulation or greater. However, the South West exhibits low levels of central heating (81% of dwellings), with the majority of the remaining dwellings using programmable heating systems for their primary provision (13%). Relatively few dwellings use gas as the fuel for their primary heating system (only 71% compared to an 81% national average), with electricity (14%), fuel oil (6%) and solid fuel (4%) the most popular alternatives. This pattern reflects on the parts of this region not being serviced by the mains gas network.

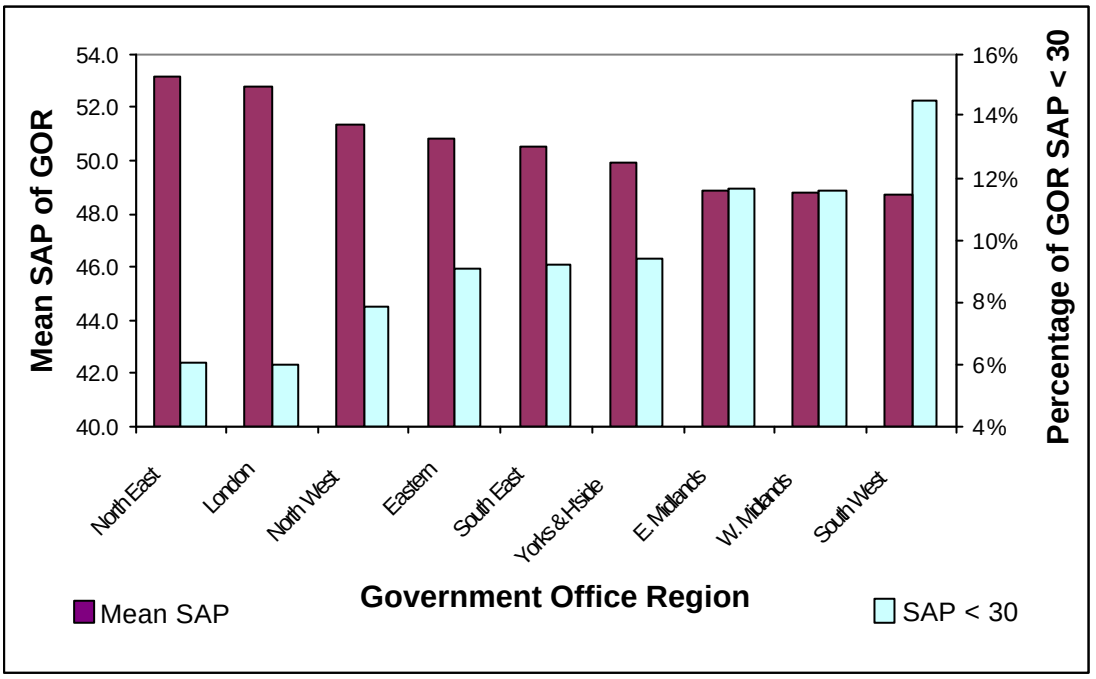

Figure 2.4 – Mean SAP rating by Government Office Region (all dwellings).

TENURE.

2.4 The difference in energy efficiency between the tenures results from a combination of the different characteristics of the stock within each sector, and the different maintenance strategies employed.

The social rented tenures - Registered Social Landlord (RSL) and local authority - have the highest mean SAP ratings in the stock. The high SAP ratings are partly due to the large number of purpose built flats within these tenures, but also to the high levels of insulation seen in this stock. The RSL sector does particularly well with a mean SAP rating of 60. This tenure has a high proportion of cavity walled dwellings (81%) and the highest level of CWI in the stock (44%). Loft insulation is also at a very high level within this sector – 45% of houses and bungalows in this sector have 150mm or more of loft insulation and less than 2% have no loft insulation. 80% of RSL dwellings have central heating as their primary heating provision, with

a high proportion of the remainder (16%) using a programmable system for their primary heating – the distribution of primary heating systems within each tenure is shown in Figure 2.5 below.

Local authority dwellings show a lower mean SAP rating (54) than RSL dwellings, primarily because they tend to be older. 84% of local authority dwellings have a central heating system as their primary heating provision, 9% have a programmable system and 8% rely on fixed heaters. Insulation levels are generally high within the local authority stock – 77% of local authority dwellings are of cavity wall construction, with 35% of these having CWI. Local authority houses and bungalows have a higher than average level of loft insulation – 33% of dwellings in this tenure have 150mm or more of loft insulation, while less than 2% have no insulation.

The owner occupied sector has average energy efficiency (mean SAP of 50). This tenure exhibits high levels of central heating (89%) and of the 70% of dwellings with cavity walls, about 35% are insulated. Approximately 25% of houses and bungalows in this sector have 150mm or thicker of loft insulation. The owner occupied sector exhibits considerably higher levels of gas consumption than all other tenures with a mean of around 21,000 kWh per household with gas.

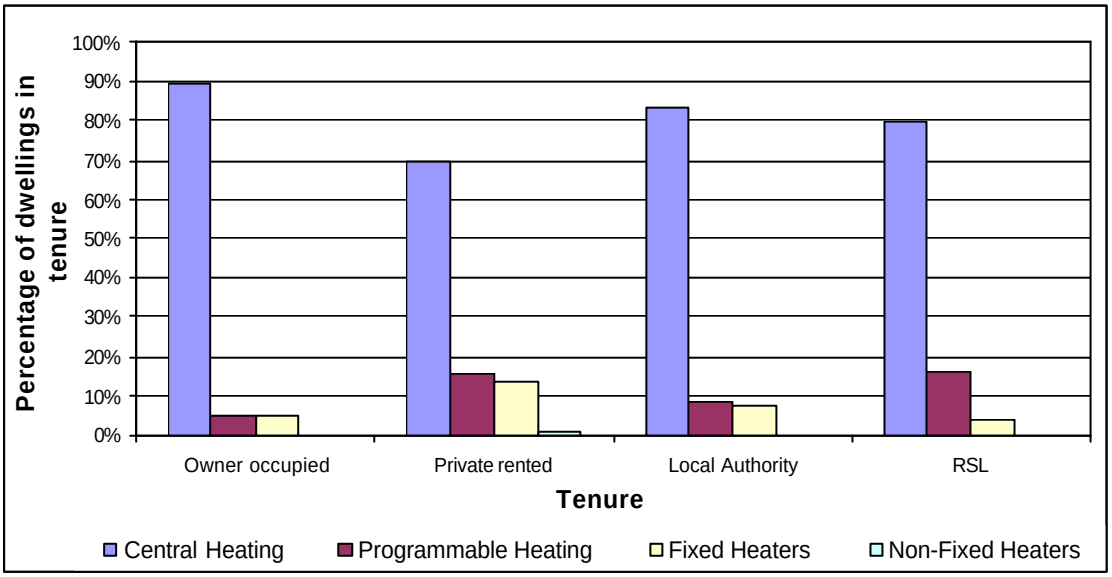

Figure 2.5 – Primary heating provision by tenure (all dwellings).

Particularly apparent is the poor energy efficiency of the private rented sector, which has a mean SAP rating of 45 - 19% of this tenure have a SAP rating below 30 (compared to 9% across all tenures). The low SAP ratings have a number of causes. The private rented stock is old (43% are pre-1919 dwellings), and as such relatively few (49%) are of cavity wall construction. Of those with cavity walls only 28% have CWI installed, and levels of loft insulation are also lower than average (12% of houses and bungalows in this tenure have no insulation whatsoever, and only 16% have 150mm or thicker installed). Central heating systems are considerably more scarce than in the other tenures (70%), and programmable (16%) and fixed heater (14%) systems are more common. Electricity consumption is higher than average in this tenure (around 6,600 kWh per household) – reflecting the low energy efficiency and the type of heating systems present in this group.

AGE OF HOUSEHOLD REFERENCE PERSON (HRP).

2.5 Households with an older Household Reference Person (HRP) are more likely to live in a dwelling with a poor SAP rating. There is a clear drop in mean SAP as the age of the HRP increases – from a SAP rating of around 53 for an HRP aged 26-35 to a mean SAP rating of 45 for an HRP aged over 85. An anomaly to this pattern is when the HRP is less than 25 years old – this subgroup has a mean SAP slightly lower than might be expected (SAP = 51). This trend is shown in Figure 2.6 below.

If we take as a subgroup households where the HRP is older than 65 we observe a decrease in levels of central heating and an increasing prevalence of programmable and fixed heaters as the primary heating system. Among households with the very oldest HRPs (HRP is older than 85) only 74% have a central heating system, with 16% using a programmable system and 10% using fixed heaters systems.

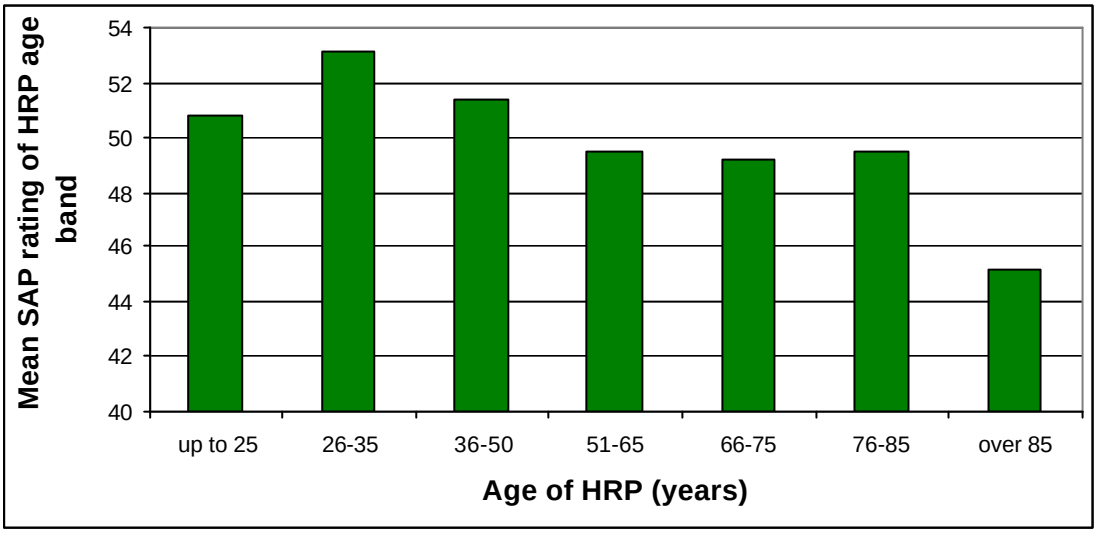

Figure 2.6 – Mean SAP by age of HRP.

HOUSEHOLD TYPE.

2.6 The differences seen within households of a different composition largely reflects the type and tenure of the dwellings within each group. The distribution of SAP ratings for the different household types is shown in Figure 2.7 below.

Among 'couples with no dependent children' we see younger couples tending to live in more energy efficient dwellings. 'Couples under 60 with no dependent children' have a mean SAP rating of 51, compared to 48 for the 'couples over 60 with no dependent children' group. We can associate some of the low SAP ratings seen in the older couples group with a high percentage of couples over 60 living in energy inefficient bungalows.

The single person groups are more likely to live in dwellings with either a high or low SAP rating. The mean SAP rating of the 'one person under 60' group is 51 – with 10% living in dwellings with a SAP less than 30 and a higher than average proportion (12%) living in dwellings with a SAP greater than 70. Central heating is considerably less common than average within this group, with only 75% of this household type having central heating installed. 15% of these households use programmable systems, and about 10% use fixed heater systems as the primary heating system. Despite the low levels of central heating it is likely that the average SAP rating of this group is maintained by the high proportion of this group living in (particularly low-rise) purpose built flats. The mean gas consumption of around

14,000 kWh for this group is the lowest of all households types and considerably lower than the national average.

The 'one person aged 60 or over' group shows a mean SAP of around 50. A high percentage of this group live in dwellings at either end of the SAP rating scale – 13% live in dwellings with a SAP less than 30 and a further 13% live in dwellings with a SAP rating above 70. A lower than average proportion of these households have central heating in their dwellings (80%) with programmable and fixed heater systems being relatively popular among these groups as the primary heating system (12% and 8% respectively). As in the 'couples over 60' group we can associate some of the poor SAP ratings seen in this group with this household type living in inefficient bungalows.

'Couples with dependent children' show a good standard of energy efficiency. The mean SAP rating of this household type is around 52. Central heating is at its highest level within this household type – 93% of households in this group have central heating as their primary provision. This group shows a high level of measured consumption – mean gas consumption is 22,700 kWh per household and mean electricity consumption 6,000 kWh per household.

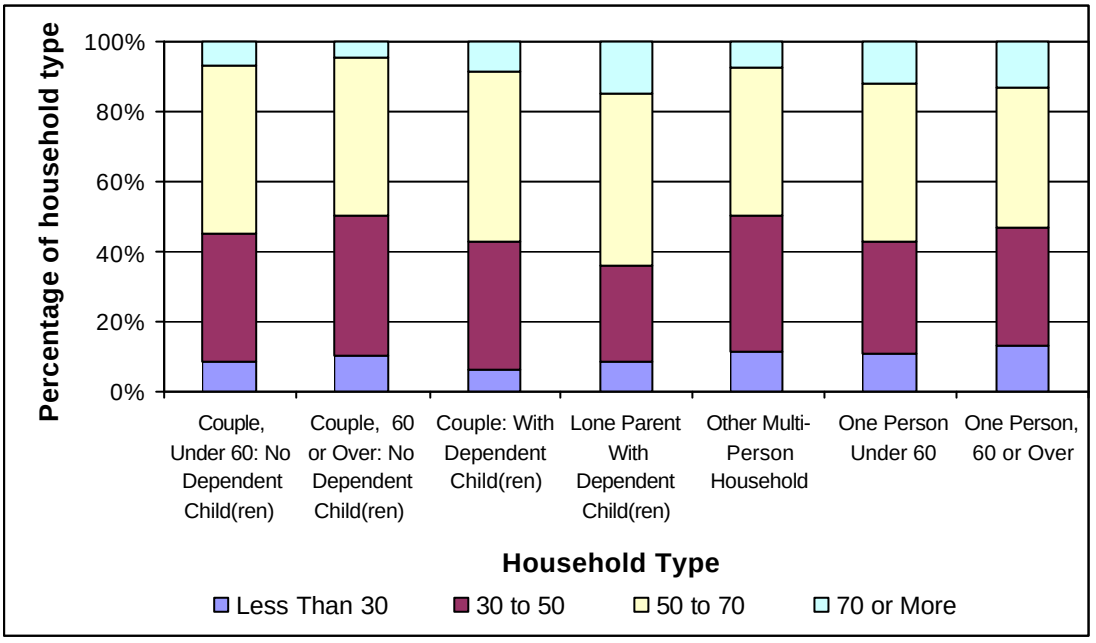

Figure 2.7 – Banded SAP ratings by household type (all households).

The 'lone parent with dependent children' group has the highest mean SAP rating of all household types (SAP = 54). A high proportion of this group live in dwellings with a SAP greater than 70 (15%), although 8% live in dwellings with a SAP below 30. The high SAP ratings seen in this group can largely be explained by the high percentage of this group in the social tenures and living in purpose built flats.

The 'other multi person household' group is a very mixed group including house/flat sharers, lone parents with no dependent children and households containing more than one couple. Overall this group shows a lower than average standard of energy efficiency. The mean SAP rating of this household type is around 49, with approximately 11% of households having a SAP below 30.

INCOME OF HRP & PARTNER.

2.7 A high proportion of low income households live in dwellings with low SAP ratings - approximately 13% of those in the lowest income quintile live in dwellings with a SAP less

than 30 (see Figure 2.8 below). These households tend to live in older dwellings with low levels of central heating (only 78% of those in the lowest income quintile have central heating installed) and lower energy efficiency throughout. However, a high proportion of low income households also live in dwellings with a SAP rating greater than 70 (13%), reflecting the high proportion of low income households living in purpose built flats, and living in the social tenures.

Households in the highest income quintile are least likely of all quintiles to be found in dwellings with a very low SAP (below 30) but also the least likely to be found in a dwellings with a very high SAP (above 70). The low SAP ratings can be associated with the large number of high income households who live in detached houses. However, 95% of those in the highest income quintile have central heating installed which, combined with energy efficiency in other areas, counteracts this effect to produce some of the high SAP ratings observed.

There is a clear correlation between measured levels of consumption and income. Households in the lowest income quintile have the lowest average level of gas consumption (around 16,900 kWh per household) and also the lowest average level of electricity consumption (around 4,600 kWh). As incomes increase we see higher levels of consumption with the highest income group having an average gas consumption of 23,700 kWh and electricity consumption of about 6,300 kWh. Many factors are likely to produce this pattern including tenure, dwelling age, dwelling type and the size of dwellings inhabited by households of different incomes – as well as the funds available for heating and the attitude towards expenditure on fuel.

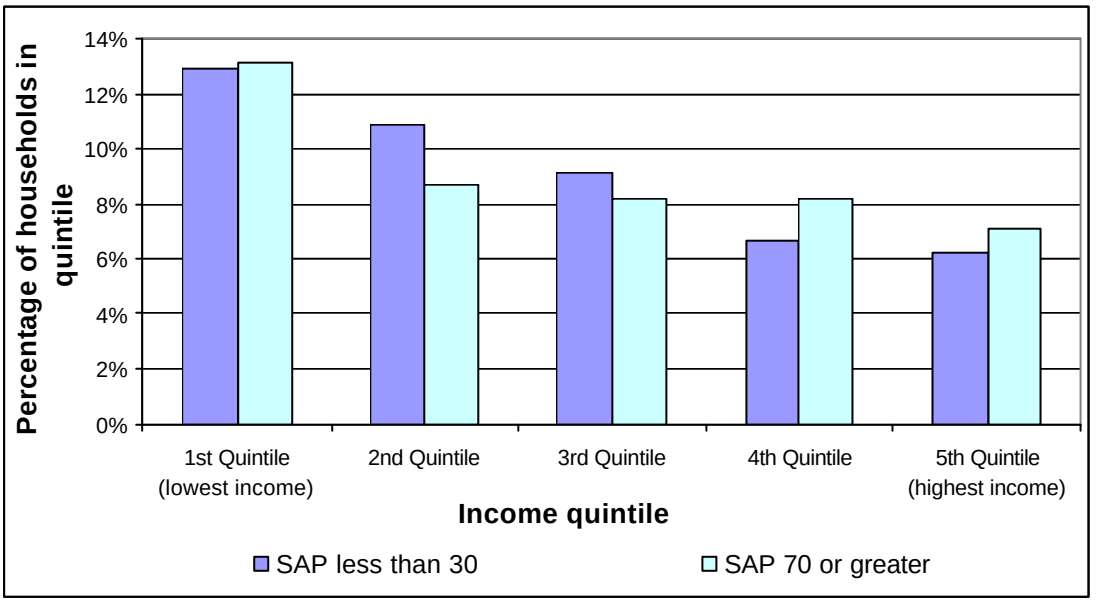

Figure 2.8 – SAP ratings below 30 and above 70 by income (all households).

Change in energy efficiency since 1996 EHCS.

3.1 This section of the report describes the changes in the energy efficiency of the housing stock since the 1996 EHCS. It considers the installation of thermal insulation measures, changes in space and water heating systems and compares the SAP ratings in 2001 with those observed in 1996. It also looks at the observed consumption measured as part of the 1996 and 2001 surveys[1].

[1] The 2001 fuel consumption survey took place over the period 2001 to 2003 and can be said to roughly equate to 2002. It is based upon a sub-sample of the 2001 EHCS of around 7,400 dwellings. Grossing of the survey is to the 2001 EHCS stock totals.

INSTALLATION OF THERMAL INSULATION MEASURES.

3.2 In 2001, 35% of households with predominantly cavity walls in England have CWI, an increase from 22% in 1996. This corresponds to an increase of around 2.4 million dwellings. Of these, an estimated 1-1.5 million can be attributed to retrospective installations of CWI to existing dwellings. This increase is particularly marked in the private rented and RSL tenures. The proportion of private rented dwellings with CWI has risen from approximately 11% in 1996 to around 28% in 2001. Within the RSL sector there has also been a significant increase - from 25% in 1996 to 44% in 2001. Although there has clearly been significant installation of CWI in these two tenures, the changing nature of the stock as a result of new build and of stock transfer between tenures complicates the picture.

3.3 Levels of loft insulation have also increased considerably since 1996. There are around 1.7 million more houses possessing very thick loft insulation (150mm thick or greater) in 2001 than in 1996 – reflecting energy efficiency programmes encouraging the installation of loft insulation. There still remain some houses with no loft insulation whatsoever (although these numbers are down slightly on 1996) - in 2001, 5% of all houses and bungalows with an unconverted loft have no loft insulation (corresponding to around 800,000 dwellings), compared to 7% in 1996.

3.4 Double glazing is found in more dwellings in 2001 than in 1996. In 1996, only 60% of households had any double glazing - this increases to around 76% in 2001. The extent of double glazing in each dwelling has also increased, full house double glazing rising from 31% in 1996 to 51% in 2001.

3.5 Almost all hot-water cylinders (98%) are insulated in 2001. The period 1996 to 2001 shows a continuation of the trend from flexible jacket cylinder insulation to the more efficient foam coating - the proportion of cylinders insulated with a foam coating increased from 45% in 1996 to 57% in 2001.

CHANGE IN SPACE AND WATER HEATING SYSTEMS.

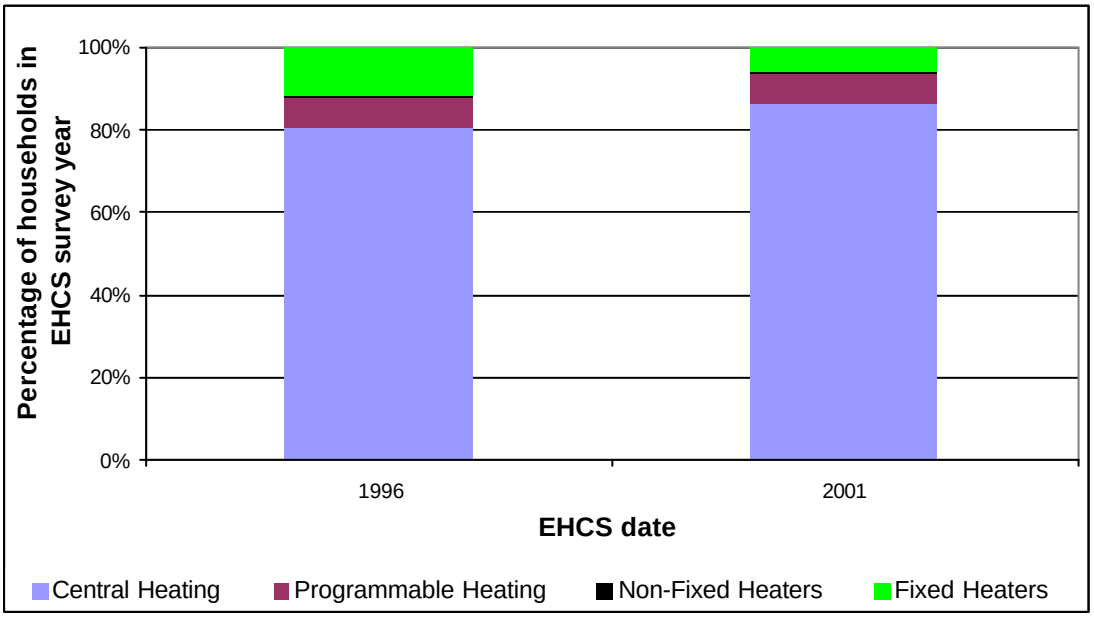

Figure 3.1 – Primary heating provision – proportion of stock in 1996 and 2001 (All households).

3.6 The proportion of households with central heating has increased from 80% in 1996 to 86% in 2001. There has been a corresponding drop in the number of households employing fixed

heaters (down from 12% to 6%) while the number of households using a programmable system (almost exclusively electric storage radiators) has remained approximately constant (at around 8%). The change in primary heating systems across the stock is shown in Figure 3.1 above.

3.7 A large drop in the use of fixed heaters can be seen within the private rented sector (down from 26% in 1996 to 14% in 2001). This pattern is also seen in the high-rise purpose built flat group which has seen fixed heater use drop from 12% to 2% in favour of programmable heating systems.

3.8 Alongside the increase in central heating systems there has been an increase in the proportion of dwellings able to heat water in combination with their central heating, and a drop in the percentage of dwellings with immersion heaters.

CHANGE IN SAP RATINGS.

3.9 The period 1996-2001 has shown an increase in SAP ratings throughout the stock[1]. The average SAP rating of all dwellings in England is 50.5, an increase of around five points on the 1996 figure. There are fewer dwellings with a SAP less than 30 in 2001 (9%) than in 1996 (15%). There are also more dwellings with very high SAP ratings - 9% of dwellings in 2001 have a SAP rating above 70, compared to 5% in 1996.

3.10 SAP ratings are seen to increase in stock of all ages and across all tenures. This improvement in the SAP ratings of existing stock indicates the installation of energy efficiency improvements such as additional insulation or more efficient heating systems.

3.11 The rented sectors show a larger improvement in SAP rating than the owner occupied sector. The RSL and private rented sectors show a six point increase, and the local authority sector a seven point increase - compared to just four points within the owner occupied sector. This increase in SAP reflects both new-build dwellings and improvements to the existing stock. The change in mean SAP rating by tenure between 1996 and 2001 is shown in Figure 3.2 below.

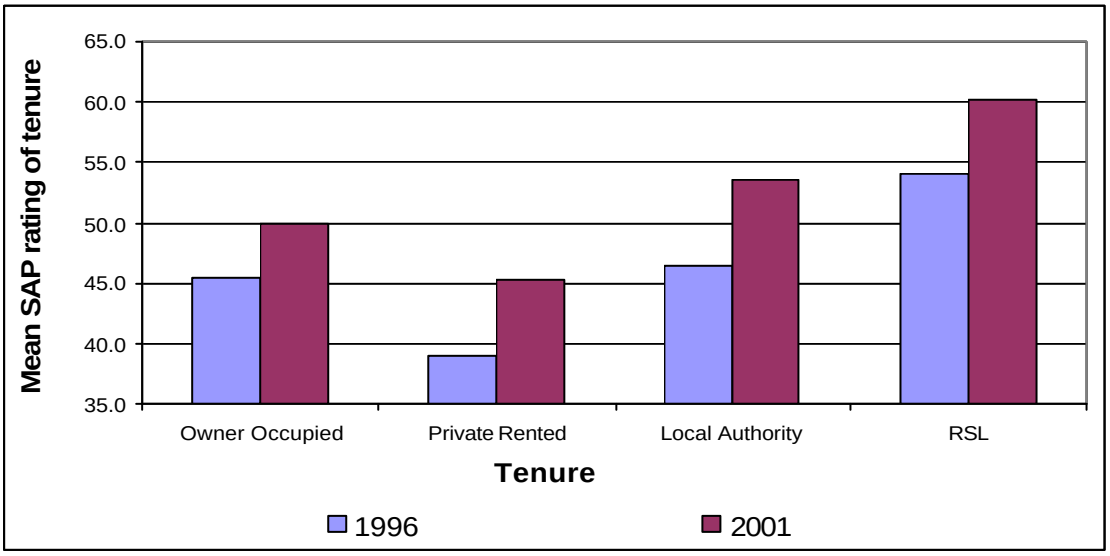

Figure 3.2 – Mean SAP by Tenure – Comparison between 1996 and 2001 (all dwellings).

[1] 1996 SAP ratings have been calculated in this analysis using the 2001 SAP methodology to enable comparison with the 2001 data.

3.12 The change in mean SAP rating is not uniform across the country – a difference which we can associate with the different tenure patterns in each region. The North East GOR (which has a high proportion of dwellings in the social tenures) has shown a seven point rise, whereas the South East GOR (with a high proportion of owner occupied stock) has only shown a three point rise.

3.13 Some household groups have seen bigger improvements than others. The 'lone parent with dependent children' group has seen the largest average increase (seven points) of all household types. Households in the lowest income quintile have also seen a greater increase in mean SAP (seven points) than the higher income quintiles.

CHANGE IN FUEL CONSUMPTION.

3.14 Measured gas and electricity consumption has increased between 1996 and 2001. Total electricity consumption across all households has increased by around 17% (from 319 PJ to 390 PJ) and total gas consumption by about 22% (from 1,082 PJ to 1,270 PJ). These increases should be viewed in the context of a rise in the number of households of about 4% between 1996 and 2001 (from around 19.6 million to 20.5 million).

The annual mean electricity consumption per household has increased from around 4,500 kWh in 1996 to 5,300 kWh in 2001. The annual mean gas consumption has increased from approximately 18,000 kWh per household in 1996 to around 19,800 kWh in 2001.

3.15 Annual mean electricity consumption has increased across all income quintiles, although more so in the lower quintile (from around 11,900 kWh to 16,900 kWh). Annual mean gas consumption has increased in the lowest three income quintiles, and decreased in the two highest income quintiles.

3.16 The largest increase in gas consumption is among the two elderly groups (the 'one person over 60 group' has increased from 11,700 kWh in 1996 to 17,100 kWh in 2001 and the 'couples over 60' group increased from 18,900 kWh to 22,200 kWh).