



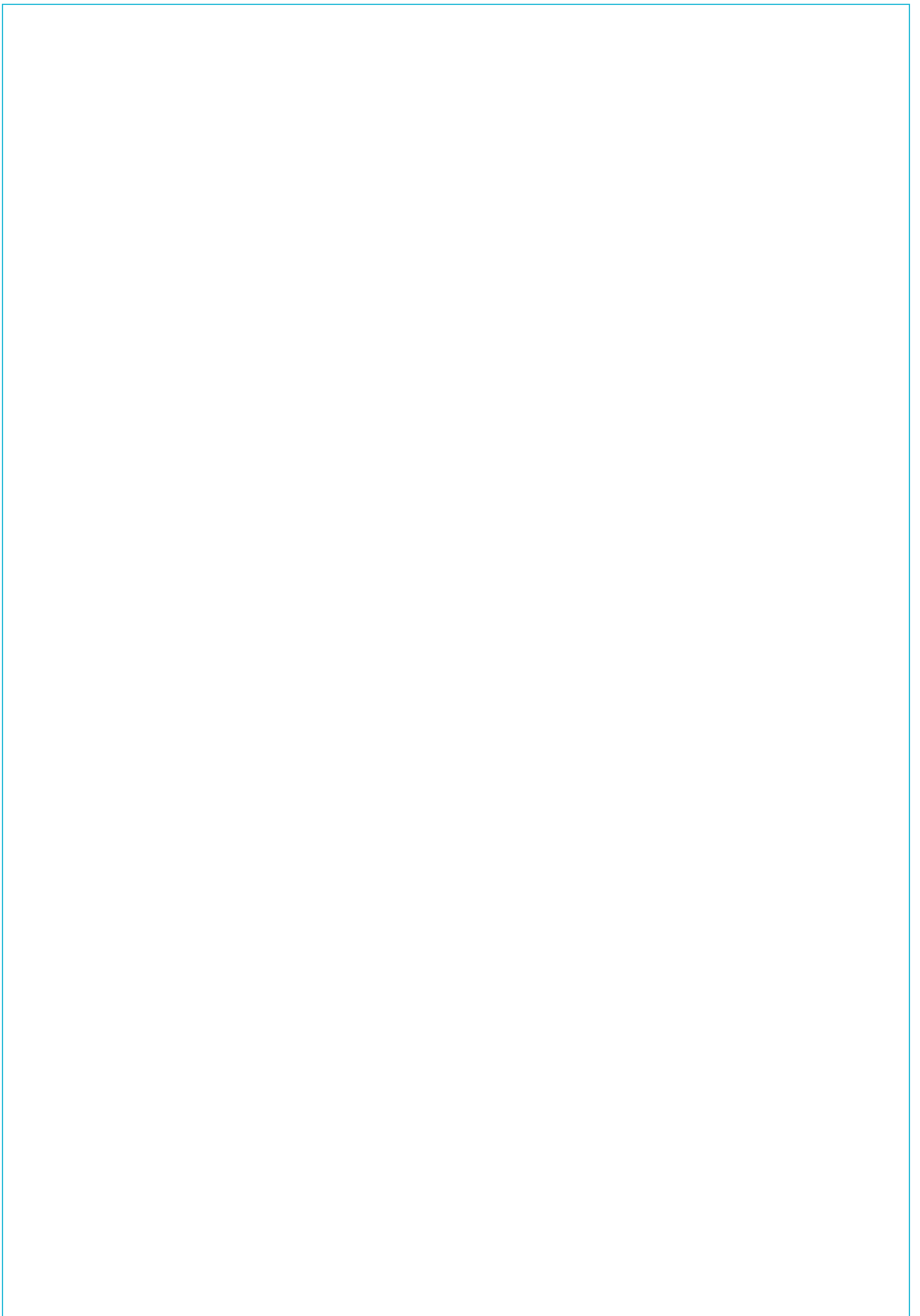
**SevernWye**  
ENERGY AGENCY

# **Financial and Support Instruments for Fuel Poverty in Social Housing (FinSH)**

D3.1 Review of Current Knowledge of  
Target Group Behaviour – UK

May 2009

# Report



# Contents

<b>1</b>	<b>Introduction</b>	<b>4</b>
	1.1 Energy Poverty in the UK	4
<b>2</b>	<b>Vulnerable Households</b>	<b>8</b>
<b>3</b>	<b>Responsibilities for Taking Action on Fuel Poverty</b>	<b>11</b>
<b>4</b>	<b>Energy Using Behaviour</b>	<b>11</b>
	4.1 Landlords and Tenant Behaviour	11
	4.2 Achieving more Energy Efficient Behaviour	13
<b>5</b>	<b>Measures and Finance</b>	<b>13</b>
<b>6</b>	<b>Strategies to Include Tenants</b>	<b>14</b>
<b>7</b>	<b>Acknowledgments</b>	<b>16</b>
<b>8</b>	<b>Appendix</b>	<b>17</b>
<b>9</b>	<b>Contact</b>	<b>36</b>

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## **1. Introduction**

### **Review of current knowledge of target group behaviour (UK)**

The information below was collected through a combination of desk study and 25 interviews with individuals with expertise regarding social housing or with a specific role in relation to fuel poverty.

The majority of the interviewees felt that current research did reflect the issue of fuel poverty, although one felt it was not very 'joined-up', and another said that there needs to be more research into the ways that fuel poverty can be alleviated through energy efficiency, advice and improved access to increased benefit take-up. Two made specific points about the need for more action to make greater impact, such as through strategic investment and whole house solutions.

The main initiators of research in this field were thought by the interviewees to be charities and fuel poverty action groups, in particular the national fuel poverty charity NEA (National Energy Action) and Age Concern, government (UK and Welsh Assembly Government), academic institutions, Energy Efficiency Partnership for Homes, local authorities, energy agencies, trade unions and fuel suppliers. This response indicates the wide range of organisations that are seen in the UK to be actively engaged in the issue of fuel poverty.

The literature review concentrated on the issue of energy using behaviour and identified a substantial body of research material available – a selection of which is described in the appendix.

#### **1.1 Energy poverty in the UK**

The issue of energy poverty (referred to in the UK as fuel poverty) is recognised publicly and in legislation in the UK. The national Fuel Poverty Strategy was published in November 2001 and annual progress reports are published – the most recent being the Sixth Annual Report, 2008. It presents the statistics for the numbers in fuel poverty across the UK for 2006, and provides an update on government policies and programmes to tackle fuel poverty. It also highlights new developments since the last annual report, which was published in December 2007.

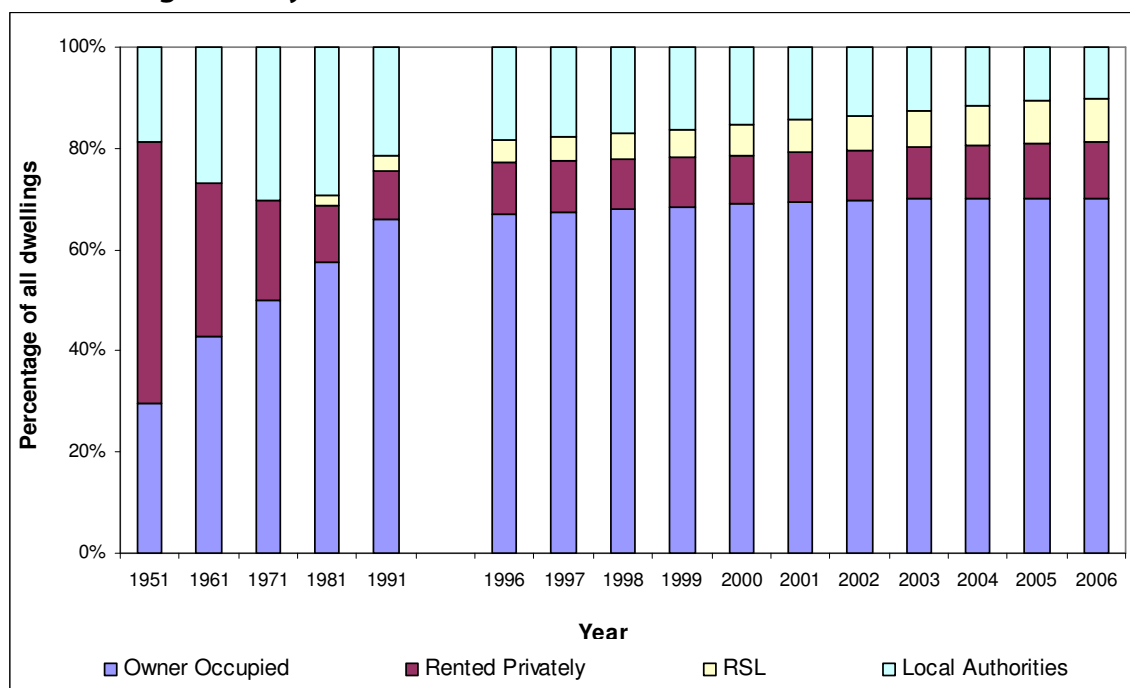
The UK government states on its website (Department for Environment, Food and Rural Affairs) that:

'Fuel poverty - where a household cannot afford to keep warm - damages the health of those living in cold homes and affects their quality of life. The old, children, and those who are disabled or have a long-term illness are especially vulnerable. The main cause of fuel poverty in the UK is a combination of poor energy efficiency in homes, low incomes and high energy prices.'

The UK Fuel Poverty Strategy 6th Annual Progress Report 2008 gives estimates for the level of fuel poverty in the UK indicating that in 2006 there were approximately 3.5 million households in fuel poverty, an increase of around 1m households since 2005. Around 2.75 million of these were vulnerable households, an increase of around 0.75 million. The increase reflects the impact of energy price rises in recent years on the number of households in fuel poverty.

Since the publication of this report, the UK has experienced an economic downturn which is likely to have added further to the upward trend in fuel poverty through unemployment and income reduction. There is no data provided as to the split between social and other housing, but the overall breakdown of UK housing tenure is given in the chart below.

### UK Dwelling Stock by Tenure<sup>1</sup>



The English House Condition Survey 2006 gives some relevant data about energy efficiency, in the two tables below:

### English dwellings failing the Decent Homes Standard (DHS) for 'Thermal Efficiency'

Tenure	Number of homes failing the DHS for Thermal Efficiency 000's	Percentage of homes failing the DHS for Thermal Efficiency %
Owner Occupier	2,569	46.9
Private Rented	749	57.7
All Private Sector	3,318	49.0

<sup>1</sup> Source: <http://www.communities.gov.uk/documents/housing/xls/140978.xls>

Local Authority	452	56.4
Registered Social Landlord	329	62.1
All Social Sector	781	58.7
All Tenures	4, 099	50.6

#### English dwellings energy efficiency: Average SAP rating

Tenure	1996	2006
Private Sector	40.7	46.8
Public Sector	46.8	57.4
All Tenures	42.1	48.7

SAP is a measure of energy efficiency based on energy audit, with grades from 0 to 100, higher numbers being more efficient.

An indication of the general level of poverty in the UK is given by the following data:

Median households income	£18, 798 (approx €25, 553)	€ / year
Poverty threshold	£11, 884 (approx €14, 890)	€ / year Precise: European reference 60% of the median income
Percentage of people living below poverty-threshold (60% of median income) (Eurostat)	11.08% (5.4 million)	%

Based on the results of the 2006 English House Condition Survey, the overall number of households in fuel poverty in England in 2006 was estimated to be 2.4m (around 11.5% of all households) of which around 1.9 million were vulnerable. This represents a total rise of 0.9m households since 2005 and a rise of 0.7m vulnerable households over the same period. Projections of fuel poverty in England for 2007 show that prices are likely to have pushed a further 0.7 million households into fuel poverty. Projections for 2008 show a further increase in fuel poverty for England, of around 0.5 million households.

Fuel Poverty is on the rise in Wales as it is across the rest of the UK. In October 2007, the Welsh Assembly Government published the findings of its Living in Wales survey. This showed that although fuel poverty had fallen significantly between 1998 and 2004 - from 330,000 to 134,000 households - rising energy prices mean that the number of fuel poor households almost doubled to 240,000- 250,000, between 2004 and 2006. Of these households 209,000 are classed as "vulnerable". Further energy price increases in 2008 mean that we estimate that 340,000 households in Wales are now in fuel poverty.

Recent energy price increases means that by the end of 2008 the average household bill for a household in Wales was over £1300. Although prices are starting to go down slightly they are likely to remain high. Furthermore, electricity prices in Wales are 10% higher than those in England. In Wales there are over 200,000 households have no access to the mains gas and for thousands solid walls makes effective insulation difficult. Low income is a major component of fuel poverty and, despite rising economic prosperity, Wales remains amongst the poorest regions in Europe.

The housing and homelessness charity Shelter, highlights the problem of homelessness in the UK, and sees social housing as key to solving the homelessness crisis, because it provides a vital form of affordable housing. They point out that there is not enough social housing in England to meet current housing need and waiting lists are at an all-time high.

A major reason for the social housing sector shrinking in the past 30 years is that hundreds of thousands of social tenants have bought their homes during this time, after they were given the Right to Buy (council housing tenants) or the Right to Acquire (housing association tenants). This trend, combined with low levels of social house building, has drastically reduced the availability of social housing in the UK. As the shortage of social homes has worsened, those homes that do become available now tend to be allocated to people with complex social, economic, and health problems, increasing the risk of community breakdown.

## 2. Vulnerable households

Shelter and Welsh Assembly Government statistics indicate that overall, 18% of all households in England (15.5% in Wales) live in social housing, and that households with certain characteristics are over-represented, particularly those that tend to be vulnerable, and with *low rates of employment and low income levels*.

- 46% of lone parents live in social housing (42% Wales)
- 22% of people over 65 live in social housing (in Wales 11% 60-69 years old)
- 26% of people aged 75 or over live in social housing (in Wales 11% 70 years or over)
- 41% of disabled individuals requiring specially adapted accommodation live in social housing (27% in Wales)
- 27% of ethnic minority households live in social housing (less than 2% in Wales )
- 68% of social housing tenants are economically inactive (66% in Wales) - of these, 6% are unemployed (36% in Wales) and 32% are retired (30% in Wales)
- 59% of social housing tenants are on housing benefit (47% in Wales)
- The median gross income for households in social housing in 2006/07 was £12,169 (£11,960 in Wales), compared with £29,837 (£24,700 in Wales) for households across all tenures.
- Over half of households in social housing have an annual income of less than £10,000 (22% in Wales).
- Only 7% (2.5% in Wales) of all households in social housing have a gross annual income of £30,000 or above.

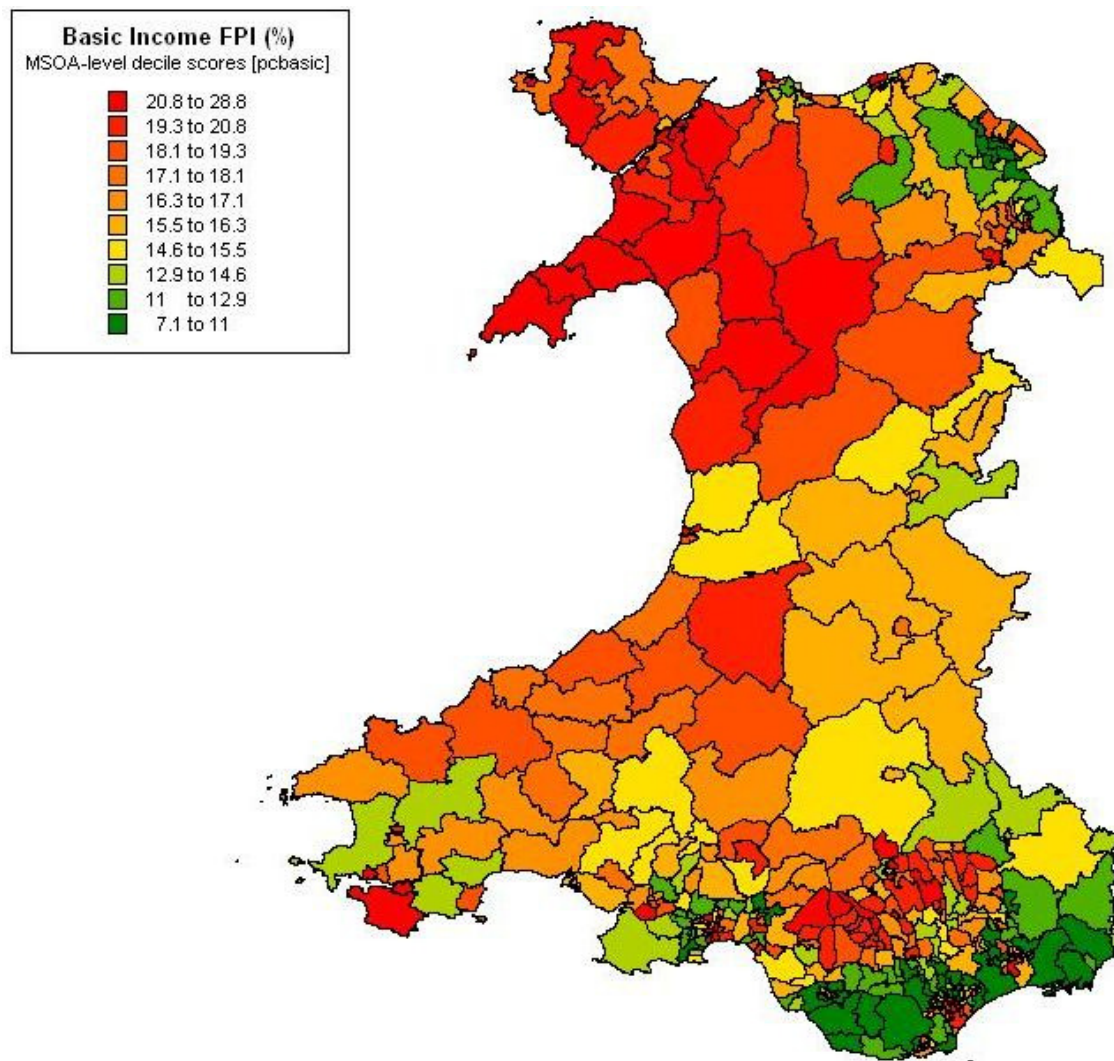
A recent report entitled 'A Small Area Fuel Poverty Indicator for Wales'<sup>2</sup> (2008) provides small area estimates of the number and percentage of households across all tenures that are likely to be living in fuel poverty provides the following statistics and map:

The number of 'Basic Income' fuel poor households is equal to:

- 2.7% of Households lacking central heating
- 0.9% of Dwellings built pre-1919
- 1.1% of Under-occupied single person households
- 1.3% of Single pensioner households
- 1.3% of Single non-pensioner adult households
- 1.7% of Households headed by someone unemployed
- 1.0% of Households headed by someone not economically active
- 1.5% of Households sharing use of a bath/shower or toilet

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<sup>2</sup> Source: <http://wales.gov.uk/docs/desh/policy/090129fuelpovertyreporten.pdf>



*Fig: Basic Income Fuel Poverty at 2001 Middle Super Output Area Level (%)*

The interviewees described the groups likely to be in fuel poverty in the UK as having the following characteristics:

- low income – especially those that don't qualify for any extra help
- economically inactive such as unemployed and pensioners
- elderly
- young families/children, especially single parent families
- people with disabilities or long term illness
- people living alone
- low income single adults
- those living in the most energy inefficient homes, such as solid-walled older homes and pre-1980 system-build
- those living in homes in poor condition/disrepair – with examples such as private rented, House in Multiple Occupation (HMOs), student lets
- those living in 'hard to treat' homes - ones that are practically more difficult and expensive to improve the energy efficiency of through retrofit, typical issues being

the roughly 30% of the existing housing stock that has walls without cavities that can be filled, or homes not on the mains gas network

- people living in areas of high unemployment
- households with inefficient or expensive heating systems
- single widows or widowers still living in large homes

### **3. Responsibility for taking action on fuel poverty**

Responsibility for alleviating the problem of fuel poverty is seen as lying mainly with central government, but filtering down through local authorities, housing providers and those third sector organisations with an energy or social welfare remit. It was pointed out that landlords are responsible for social housing, and are driven by regulation and the Housing Corporation standards and funding regime. Some interviewees cited fuel suppliers as having some responsibility.

Tenants see responsibility as lying with the landlord, but both need to be engaged in action to improve efficiency in terms of measures and behaviour. It is recognised that the split incentive is a problem (where expenditure on the property relies on the landlord but direct benefits accrue to the tenant), especially as regards private landlords, but housing associations and Councils should be taking all opportunities to retrofit energy efficiency improvements and increase financial capacity of tenants. An example of the split incentive is that a landlord may choose to install electric rather than mains gas heating – cheaper to install and without the annual maintenance costs, but more expensive to run.

A comment made was that from a tenant's perspective the main issue they experience directly is the price of fuel and how to pay the bill, and that underlying issues such as the energy efficiency of the property and typical consumption levels are secondary, with investment in the social housing stock buried further down still (in amongst things over which they have no control). It was suggested that there should be more incentives for landlords to address this issue, and more education for both landlords and tenants about what they can do and what their rights are.

## **4. Energy using behaviour**

### **4.1 Landlords and tenant behaviour**

No data was found specifically describing the energy using behaviour of fuel poor tenants, but comments made from personal experience included that an energy poor household tends to heat one room rather than the entire property, that tenants may be more passive than owner-occupiers on this issue, and that they are more likely to have prepayment meters (where you have to pay up-front for energy instead of getting it on credit). Examples were given of programmes using Real Time Displays to help tenants to review own consumption and implement savings through behaviour change.

The most important factors that motivate landlords to increase building energy efficiency were thought to be:

- regulation (the Welsh Housing Quality Standard is cited)
- social obligations / tackling fuel poverty
- meeting government targets and being seen to do so/reputation
- financial assistance, such as tax breaks
- improved saleability and value of property
- increased rentability

- happier tenants
- healthier tenants
- less rent arrears
- support and guidance from knowledgeable experts, for example through development of affordable warmth strategy
- a wish to be seen to be innovative
- pressure from tenant association
- threat of litigation

The most significant barriers to landlords increasing building energy efficiency were thought to be:

- costs them money which they can't get back through savings on fuel bills or increased rents
- perceived costs/lack of awareness of impact
- other pressures on budgets/conflicting priorities
- time consuming /staff time
- building works for which they are responsible
- not knowing where to start
- inconvenience
- concerns about having problems with new technology
- concerns about issues from tenants if improve some property and not others
- property costly/difficult to improve ('hard to treat')

The most important factors that motivate tenants to increase building energy efficiency were thought to be:

- financial: fuel bill savings /high energy costs /affordability of energy /low income
- financial assistance for measures
- being warmer
- health and well-being
- better living conditions
- environmental: reducing emissions
- lack of influence on landlord – they can only initiate repairs, while planned maintenance is phased and usually decided by landlord

The most significant barriers to tenants increasing building energy efficiency were thought to be:

- if they have to pay themselves, the length of time it takes to save the money back through fuel bill savings: eg higher cost of A rated appliances
- lack of information/understanding about what is energy efficient and what savings can be made
- lack of knowledge of financial assistance available
- apathy
- perceived hassle involved: upheaval of having work done on home
- lack of encouragement from landlord
- need for landlord approval
- lack of funds
- no motivation to improve someone else's property

- lack of security – could get moved out
- lack of trust of landlord
- worry that landlord may put the rent up
- other priorities
- bad news stories from others

## **4.2 Achieving more energy efficient behaviour**

The literature review indicated that a body of research exists around the issues of pro-environmental behaviour, and interventions to achieve behavioural change with respect to household impact on the environment, including energy consumption. There are also a smaller number of studies relating specifically to lower income households and/or social housing residents.

Overall features are a lack of robust evidence for quantitative savings from specific and precisely defined interventions as regard behaviour, and a view that these may not be obtainable in practice due to the difficulties in controlling the variables in longitudinal study, and in defining control groups. There is some level of consistency in ball-park figures for what is achievable, which is in the region of 5-15% savings in energy consumption. There is also sufficient consistency in qualitative comment as regards what is required to achieve behavioural change to give useful guidance to those designing interventions, including:

- Specific advice tailored to the client and their situation, and ideally verbal face-to-face as well as written
- Clear and accessible feedback on consumption and impact of changes in behaviour
- Goal setting, and motivational messages
- A sense of individual and collective agency (for example through social group collaboration, and benchmarking consumption and savings against others)
- Motivational messaging to counteract the boomerang effect (such as where people start to increase consumption after discovering that they use less than the norm)

## **5. Measures and finance**

The usefulness of the existing financial support mechanisms is seen as limited, because only some of the measures needed are funded. The availability of free loft and cavity wall insulation is significant, but support for heating measures is very limited and there is even less for more costly insulation measures and micro-generation. There are frustrations where funding is for small numbers only and it is not possible to expand/roll-out the programme (such as the heat pumps support from fuel suppliers).

Programmes are considered to be more successful if accompanied by effective advice and communications. If tenants are not consulted or involved early enough then acceptability is affected.

Comments about national programmes are that they do not use local contractors, and the quality of the work is sometimes poor.

The implementation of major measures is generally welcomed by tenants, who are appreciative of property improvements and the potential to improve comfort and reduce bills. However, the mess and disruption of major building works can cause problems if tenants left in situ.

The most popular measures are thought to be:

- double glazing
- loft insulation
- cavity wall insulation
- new appliances with lower running costs
- full house heating where this did not previously exist (gas central heating is the most popular)
- anything transient such as light bulbs

## ***6. Strategies to include tenants***

There were a few examples give of specific strategies to include tenants in implementing improvements:

- The Stroud District Council Tenant Participation Compact aims to involve tenants in the provision of housing services, including the Tenant Energy Network which is a focus group of tenants, councillors and officers
- The SWEA SHARE forum in Gloucestershire brings together social housing providers, tenants and energy experts on a regular basis to discuss issues and develop campaigns, training and advice services.
- The development of affordable warmth strategies and action plans (an approach encouraged by NEA, and supported by published resources) is a way to draw in engagement from all relevant parties has a Gloucestershire component, with some of the local groups joining in the energy saving competition being social housing tenants.
- The Energy Neighbourhood Programme (IEE), an energy saving competition in which neighbourhood groups aim to save energy over a six month period, included some social housing groups in Gloucestershire
- The Keep Shropshire Warm Initiative has had some success in reaching tenants through associations and social care and environmental health staff
- The Gloucestershire Warm and Well programme has trained housing, health and social care workers to support on energy issues and to identify signs of fuel poverty or potential health risk associated with lack of affordable warmth – there are also many other examples of this type of approach in the UK, with a sharing of expertise and experience over the past decade or so.

Experience in communicating with fuel poor tenants included providing energy advice through home visits, talks to groups, advice surgeries and awareness campaigns

Suggestions for how to reach building owners included:

- through the housing associations groups
- landlord forums
- promotion of case study examples of what has worked well elsewhere

Suggestions for how to reach tenants included:

- Through the landlord, such as tenant liaison and housing staff
- Tenant Associations
- Advice surgeries and home visits
- Via Council Tax
- Tenant Participation Advisory Service
- Health and social care services
- Local paper or radio
- Tenant newsletter
- Local tenant meetings
- Local community organisations
- Schools
- Through the workplace
- Community events
- Mailshots

Private landlords and tenants may be reached through letting agents and accreditation schemes run by local authorities.

One of the barriers cited is the need to help both tenants and housing staff to better understand energy use, and the concept of energy champions as local communicators is suggested (Community Housing Cymru).

Many tenants are socially or financially excluded on other ways than energy, so issues around deprivation can be complex.

It was noted that it is important to provide many different forms of communication in order to reach as many tenants as possible, but that it will always be difficult to reach all tenants, whatever methods are used. It can be particularly difficult recruiting the interest of younger tenants.

## **7. Acknowledgments**

Individuals interviewed who have expertise regarding social housing or with a specific role in relation to fuel poverty:

Alice Goldstone	Anne Dixon
Andrew Dewberry	Andrew Ward
Charlotte Gibson	Chris Barnett
Clare Williams	David Worgan
Gilda Costly	Gillian Warren-Holder
Harry Fitch	Heather Watts
Helen Stockton	Joanna Nicholson
John Burns	John Williams
Kaye Welfare	Katherine Shepherd
Linda Wright	Mark Tebboth
Paul Simpson	Sally Davison
Sioned Hughes	Steve Winmill

Name of organisations from which the interviewees above represent:

Birmingham City Council	Bridgend County Borough Council
Care & Repair in Powys	Ceredigion Council
Chris Barnett Associates	Community Housing Cymru
Domestic and General Insulation Ltd	Energy Saving Trust
Herefordshire Council	Marches Energy Agency
Newark & Sherwood District Council	Newark & Sherwood Homes Ltd
OG Training	Scottish Power
Severn Wye Energy Agency	Stroud District Council
Welsh Assembly Government	

## **8. Appendix**

### **Literature review**

#### **Source 1**

UK Department for Environment Food and Rural Affairs, (January 2008), A Framework for Pro-Environmental Behaviours, [www.defra.gov.uk](http://www.defra.gov.uk).

#### **Aims of study**

To support policy development and implementation, for the purpose of environmental protection through more sustainable patterns of consumption - by setting the broad social marketing framework within which priorities and opportunities may be identified for influencing the behaviour of individuals and communities.

#### **Methodology**

##### Sample

Total sample is the whole of the UK population, but there were various qualitative and quantitative stages to the study for which different sampling approaches were used.

##### Description of study approach

Social marketing methodology, starting with scoping and moving on to more detailed customer insight, segmentation and strategy. Focused on 12 headline behaviour goals, including several relating specifically to home energy use: installing insulation, better energy management, buying energy efficient products and installing micro-generation. Considered each goal against people's willingness and ability to act respectively, and then investigated the motivators and barriers related to these goals. Common motivators and barriers were identified, and then a segmentation approach used to divide the population into seven clusters, each with a set of identifiable set of attitudes and beliefs in relation to the environment.

#### **Results**

The seven population segments are mapped against a 2 axis graph representing ability to act and willingness to act, in terms of their general attitude to the environment and attitude to the 12 goals. The segments with the highest potential to change behaviour are the 'Positive Greens' (18%), 'Concerned Consumers' (14%) and 'Sideline Supporters' (14%). More difficult are the 'Cautious Participants' (14%) and the 'Waste Watchers' (12%), and the greatest barriers are faced with the 'Stalled Starters' (10%) and the 'Honestly Disengaged' (18%).

**Source 2**

Darnton, A., (2006), Shaping the energy-related behaviour of future generations, University of Westminster (for the Energy Saving Trust), UK.

**Aims of study**

To identify the impact of education and awareness-raising programmes on children's long-term behaviour (is their behaviour as adults)

**Methodology**

Description of study approach

A desk review of existing research evidence, covering the following topics:

- theories of pro-environmental behaviour change
- theories of energy-related behaviours
- the role of education
- the evidence of impacts of specific educational initiatives

Six behavioural areas were covered:

energy-related behaviour  
environmental citizenship  
health (eg healthy eating)  
fair trade  
littering  
safety (eg roads)

A sample of 63 relevant sources were identified, broadly falling into three categories:

- behavioural theory
- educational theory
- evaluations of educational and awareness-raising initiatives

**Results**

There is a lack of evidence of the impact of education and awareness-raising activities with young people on their behaviours in later life (only one study doing this was found, the National Trust Guardianship Scheme, and this did not evaluate behavioural outcomes nor was it energy-related).

Such studies would be costly and difficult to undertake

Even if an evaluation identified clear behavioural impacts, it would be near-impossible to establish the causes

There is also a lack of evidence of short-term behavioural impacts of educational initiatives: many are not evaluated at all, and those that are are often not evaluated against behavioural measures

What evaluative outcome evidence is available indicates that educational initiatives can be effective in bringing about changes in young people's behaviours, at least in the short term (for example in relation to safety or healthy eating – although the latter is impacted largely by the type of food provided, for example in school canteens).

In the absence of evidence, a review of the theoretical literature underlines the view that knowledge and information play a relatively minor part in determining behavioural outcomes. Behaviour theory also highlights the differences between specific behaviours, and between individuals, in terms of the factors that drive them.

Many energy-saving behaviours are undertaken frequently and therefore dominated

by habits. By contrast, installing energy efficiency measures tend to be undertaken infrequently (and so 'windows of opportunity' are key to shaping these behaviours), and to be hugely determined by the material circumstances within which people live – such as whether their home has uninsulated cavity walls.

Even the most effective educational initiative is unlikely to play a leading role in determining what energy saving behaviours are undertaken by adults day-to-day. However, behavioural theory suggests that education can play a vital role in shaping some of the psychological factors (such as social norms or an individual's sense of agency) which underpin a wide range of pro-environmental behaviours, and are likely to endure over time.

Focussing on barriers to behavioural change, the external (contextual = people's actual situation and what is possible for them) ones are paramount and need to be considered before the psychological ones. The social-psychological barriers can be summarised as:

**Norms:** an individual's perception of what society expects of them.

**Agency:** an individual's sense of their own power/ability to do something, and whether their action would make a difference to the bigger problem

**Habit:** an individual's standard operating procedures, or low consciousness behaviours.

Theories related to environmental education describe a tension within the purposes of education, which can be described (in simplified form) as that between didactic education (which teaches prescribed knowledge and behaviours) and liberal education (which enables people to determine their own courses of action). These are described in the context of Education for Sustainable Development as ESD1 and ESD2, and recent thinking suggests that they are complementary and both occur (beneficially) within environmental education activities that are delivered in practice – especially where an activity involves participative methods ('learning by doing').

**Source 3**

Abrahamse, W., Steg, L., Vlek, C. & Rothengatter, T., (2005), A review of intervention studies aimed at household energy conservation, Department of Psychology, University of Groningen, Netherlands.

**Aims of study**

A desk review of studies of the effectiveness of interventions aiming to encourage households to reduce energy consumption.

**Methodology****Sample**

Thirty eight studies were reviewed, all of which were performed within the field of applied social and environmental psychology.

**Description of study approach**

The studies are categorized as involving either antecedent (commitment, goal setting, information, modelling) or consequence (feedback, rewards) strategies.

Particular attention was given to the following evaluation criteria:

to what extent did the intervention result in behavioural changes and/or reduced energy consumption?

were underlying behavioural determinants examined (eg knowledge, attitudes)?

to what extents could effects be attributed to the interventions?

were effects maintained over longer periods of time?

**Results**

Most studies focus on voluntary behaviour change, by changing individual knowledge and/or perceptions rather than contextual factors (ie pay-off structure) which may influence household behavioural decisions.

The studies indicated that interventions studied have achieved varying levels of success, but also identified weaknesses in the studies which would tend to indicate that the conclusions are not as robust as they might be, for example:

Interventions not always clearly specified (for example exactly which behaviour intended to affect)

Many studies showed that a combination of strategies is generally more effective than a single one, but there is then a lack of clear definition as to which strategies have contributed to the effect described

Very small sample sizes, especially in conjunction with large within-group variances, may have reduced the ability to achieve statistically significant results

Different indicators are used to assess impact, reducing comparability: for example in some cases behavioural changes are self-reported only, which is not on its own a sufficient indicator of change in actual energy consumption (for example it does not capture the possibility of 'rebound effect')

Most studies did not monitor effects over a long period of time, so that the longer term impact is not known

Often, an intervention's effectiveness is studied without examining underlying

psychological determinants of energy use and energy saving

Bearing in mind these weaknesses, general conclusions made with regard to interventions studied include:

Antecedent interventions:

Information tends to result in higher knowledge levels, but not necessarily in behavioural change or energy savings

Commitment and goal setting appeared successful especially when used in combination with other interventions

Single antecedent interventions are not as effective as when combined with consequence strategies

Consequent interventions:

Rewards have encouraged energy savings but with rather short lived effects (tending to disappear once intervention ceases)

Feedback appears to be effective in achieving energy savings, especially if given frequently, and within a competitive context – however there are exceptions, and in the case of low energy users the effect may be negative, encouraging higher energy use

In conclusion the study recommends:

Improvements in intervention planning:

start by identifying behaviours that significantly contribute to environmental problems

examines factors that make sustainable behaviour patterns (un)attractive, such as motivational factors (eg attitudes), opportunities and perceived abilities

carry out a problem diagnosis to examine which behaviours and behavioural determinants should be targeted by the intervention

design interventions to address and change barriers

To take a multi-disciplinary approach to intervention studies, for example:

psychologist, for changing individual level variables such as attitude, abilities

sociologist, for insight into macro-level factors such as demographic or societal developments shaping physical infrastructure and technology that conditions behavioural choices

environmental scientist, to relate behaviours into environmental impact

To focus evaluation of the effectiveness of interventions on behavioural determinants as well as (changes in) energy-related behaviours

**Source 4**

Martiskainen, M., (2007), Affecting Consumer Behaviour on Energy Demand, Sussex Energy Group, SPRU, University of Sussex, UK.

**Aims of study**

A review of literature on household energy consuming behaviours and how those behaviours can best be influenced to reduce consumption and carbon emissions. The research also examined whether and how measures to encourage behavioural change could be included future phases of the UK's Energy Efficiency Commitment (fuel supplier obligation to achieve savings) and related policies

**Summary of key conclusions:**

- Behaviour is a complex combination of our emotions, morals, habits, social and normative factors and changing any of these components can be challenging
- A combination
- Majority of energy consuming behaviours are based on habits and routine (repetitive actions such as using lights and cooking), minority of behaviours are one-shot behaviours (e.g. investment in loft insulation)
- Habits need to be broken down and changed by introducing new behaviours, building awareness can help
- Measures such as feedback displays, better billing and micro-generation can help making people more aware of their energy consumption, and consequently influence their behaviour
- Research has shown that feedback on energy consumption can encourage households to save energy, by an average of 5-15% depending on the measure
- To be effective, intervention measures such as feedback via a display unit/bill have to be:
  - o Clearly presented and consisting of simple messages
  - o Containing information relevant to the household/consumer
  - o Involving some kind of a goal or a commitment
  - o Be visible, consistent and frequent.
- A combination of energy advice with display units and more innovative billing for example could provide households with a mix of better information and feedback on their energy consumption, and initiate awareness and possibly behavioural change
- Further experimental research is required to establish which behavioural change measures can achieve the most, long-term energy savings

**Source 5**

Boardman, B., Darby, S., Green, J. & Maby, C., (1998), Advice into Action: an evaluation of the effectiveness of energy advice to low-income households, eaga Charitable Trust, UK.

**Aims of study**

A review of the work to date (1998) on the evaluation of the effectiveness of energy advice with specific emphasis on low income households

**Methodology****Sample**

110 advice providing organisations in the UK responded to request for information, approximately one third were interviewed, and fifteen evaluation reports examined

**Description of study approach**

A wide cross section of organisations that might be providing energy advice were contacted for information. These included Energy Efficiency Advice Centres (government funded), social housing providers, specialist energy advice organisations, fuel suppliers and voluntary sector organisations. Those who said they attempted to establish the effect of the advice on their clients were interviewed, and reported evaluations studies were examined in detail.

**Results**

The majority of energy advice providers carried out no formal evaluation of the benefits of their work for the clients, although many contact clients to assess and monitor quality of delivery and customer care. Those evaluations that do exist are diverse in approach as is the advice delivery approach itself.

Advice service appeared to fall broadly into 4 categories:  
opportunistic advice related to the installation of new heating or energy efficiency measures  
client-led projects with a fuel poverty focus  
research-led projects  
energy efficiency programme with media support (EEACs)

It was concluded that inconsistent methods of evaluating the benefits of advice can distort the reported value of different forms of provision and prevent fair comparisons.

Advice targeting low income households was seen to be more effective if:  
it focused on no-cost behavioural change, fuel supply problems, condensation and measures that can be carried out with grants  
it was tailored to the client's needs and circumstances and either:  
opportunistic: given at time of change such as moving house, new heating system (ideally through home visit, and at early stage to establish beneficial habits when opportunity for change presents – more difficult to change habits later)  
client-led: responding to enquiry by client  
it involved personal contact with the adviser, as many low income households experience a complex mix of problems

Attempts at quantifying results identified that:

Client led advice with a fuel poverty focus measured fuel savings of around 10%

Opportunistic advice also appeared to achieve fuel savings of around 10% by enabling maximisation of benefits of new heating or insulation measures.

Advice from the EEACs (based on evaluation of four year pilot) showed estimated savings of around 8%, of which 5% comes from installation of energy efficiency measures (note that as EEAC approach focused more on self-completion questionnaires and overall client numbers increased, proportion of clients on low incomes dropped).

Fuel poverty programmes with face-to-face advice were at least as cost-effective as the EEAC approach in terms of cost vs savings, especially with regard to no-cost behavioural change and take-up of grant-aided measures

The least effective programmes were those set up specifically for research purposes and neither client-led nor opportunistic!

Estimates for the energy saving impact of behavioural change were inconsistent as a basis standard for this has not been established (for example how to set a value for the savings from someone having learned to switch off lights when leaving a room).

It was noted that as well as energy savings, effectiveness can also be assessed in terms of comfort, grants claimed, reduction in fuel debt or payments and improved health.

It was also noted that advisers to this client group needed not only technical knowledge but also that of fuel supply issues and the role of other local support organisations, local community knowledge, the ability to assess the situation in a household, to prioritise and communicate clearly, and establish rapport and trust.

Households who read their own meters gained feedback on consumption which increased understanding of energy saving behaviour (this was before the days of smart meters!)

**Source 6**

Boardman, B. & Darby, S. (2000), *Effective advice: energy efficiency and the disadvantaged*, Environmental Change Institute, University of Oxford.

**Aims of study**

To provide a better understanding of how disadvantaged householders can be encouraged to seek and act on energy efficiency advice; and the relative effectiveness of different modes of giving advice

**Methodology**

A review of existing knowledge and evidence, involving literature review and discussion with practitioners. The focus was upon the knowledge and opinions of advisers, and specific objectives were to investigate how disadvantaged customers currently obtain advice, how they prefer to access advice and the effectiveness of the advice they have accessed.

**Results**

Evidence from formal studies and practitioners indicates that well focused energy efficiency advice to low income households can give substantial benefits in terms of comfort, health and well-being, and can achieve savings of the order of 10% from behavioural changes alone. Likely reasons for any lack of impact are over-formulaic or perfunctory advice, too much reliance on written information and inadequately trained or inexperienced advisers.

The giving of effective energy advice requires knowledge, communication skills and commitment: recruitment, training and remuneration should reflect this. Common minimum standards are recommended.

The study identified many uncertainties and inconsistencies, indicating the need for a coherent strategy for advice, coordinated by government. 20 detailed recommendations are given.

**Source 7**

Sadler, R. et al, (2002), Benefits of energy advice New Perspectives and RMB International for the Energy Advice Providers' Group of the UK Energy Efficiency Partnership for Homes

**Aims of study**

To explore the relative effectiveness of different methods of delivering advice on domestic energy efficiency and study the benefits enjoyed by those customers who followed such advice.

**Methodology****Sample**

1,900 people who had received advice from a variety of energy advice sources (Energy Efficiency Advice Centres, fuel companies, local authorities, fuel poverty projects) between October 2000 and March 2001.

More than half had completed a paper questionnaire about their home or answered some other questions, as part of the process. Some then received the advice in a report, others received verbal advice, in the home or elsewhere or on the phone. Many received a combination. Advice covered a wide range including heating and insulation measures and grants, usage efficiency as regards heating, hot water, lighting, cooking.

**Description of study approach**

Telephone survey carried out in January 2002 – intended as long enough for people to have taken action and noticed some benefits, but not so long that most have forgotten the advice.

An additional small-scale self-completion postal survey was carried out among 35 homes where a Home Energy Report had been issued to prospective purchasers of homes by the surveyors acting for their mortgage company. The total sample of 1,935 was structured to represent all known types of domestic energy advice and the various methods of providing it.

**Results**

Between 9 and 15 months after receiving advice 85% remembered it, and most have acted on it (on average installing 1.5 measures each) and derived some benefits as a result. 70% of advice customers install at least one of the recommended measures.

The most effective forms of advice were found to be:

verbal face to face (especially if in the home and requested by the client)

written plus verbal advice (such as a written report plus phone or face to face contact)

Written reports alone had the least effect. Some customers do not recognise written advice as advice and throw it away. Verbal advice seemed particularly effective for encouraging behavioural changes. Unsolicited advice was less effective than client-led.

63% of the advice customers who followed any of the advice they received have already benefited from warmer and more comfortable homes. 23% reported improved health.

34% of all the customers receiving advice noticed lower fuel bills.

The smaller postal survey showed that most of the recipients had read their reports and remembered the recommendations, but only about half had installed any measures. One reason given was lack of money, another was that few were eligible for grants (or were even told about them). Little or no behavioural change advice was given in the reports.

**Source 8**

Abrahamse, W., (2007), The effect of tailored information, goal setting and feedback on household energy use, Department of Psychology, University of Groningen, Netherlands.

**Aims of study**

This is an applied psychological study to test the impact of a combination of interactive strategies for household energy savings, including tailored information, goal setting and feedback (comparative and otherwise)

**Methodology****Sample**

**Nationality:** Dutch (residents of the city of Groningen, which has 175,000 inhabitants)

**Sample size:**

319 households completed the first questionnaire after which a selection process operated. There were 137 households in groups 1 and 2 and 52 in the control group 3 in the final data set. The data below relates to the set of 319 households.

**Tenure:** 73% owner-occupiers, 27% renting

**Gender:** 63.8% male, 36.2% female

**Income status:** 81.4% employed, 4% students, 14.6% other; higher income groups predominated with 5.6% earning less than 1000 euros pcm and 61.3% more than 2000

Household size: average 2.3 persons

**Description of study approach**

Quasi-experimental against a background of a social dilemma model: the apparent or real conflict between individual and group benefit (for example reducing the temperature setting on a heating thermostat may make the individual less comfortable, although only if reduced below comfort levels of course, but reduce carbon emissions for the benefit of society).

Households were encouraged to reduce energy by at least 5% by acting on tailored information on how to save energy received by internet. There were 3 groups of households:

got individual feedback on their own savings

got feedback on individual and group savings

got neither (control group)

The hypothesis was that the second group would save the most, followed by the first.

The energy usage studied included both direct (household appliances etc) and indirect (energy associated with food purchase, holidays etc).

**Results**

Average savings: Group 1 5%, Group 2 5.3%, Group 3 increased energy use by 0.7%.

These differences are in the direction anticipated by the hypotheses, but are not statistically significant.

**Source 9**

Pett, J. & Guertler, P., (2004), User behaviour in energy efficient homes, Association for the Conservation of Energy, UK.

**Aims of study**

To improve understanding of how people use the energy efficient systems installed in their homes.

**Methodology****Sample**

The sample was taken from estates of participating housing associations, identified in the initial feasibility study as having been the subject of energy efficiency improvements at least 15 months previously.

**Description of study approach**

118 interviews were carried out with householders. The hypothesis tested described the relationship between the results the household get from their heating system

(Desired Results:

yes or no?), their behaviour in managing the system (Efficient, Reasonable or Inefficient) and four key influences on that behaviour:

Demographics, such as age and employment

Previous experience such as with this type of heating system and whether they loved in the house before it was improved

General awareness as shown through heating system use, use of energy saving strategies elsewhere in the home and attitudes to energy supplier switching

The instructions and advice they were given, by whom and when

**Results**

The survey's findings on respondents' demographics, previous and current heating system experience, heating controls and heating pattern, use of their current system and energy advice received, their level of energy awareness and the impact of their homes were summarised in order to describe the sample. Generally, interviewees were pleased with the energy efficiency improvements to their homes.

Most respondents (86%) got the Desired Results from their heating system

23% used the system in a way that corresponded to policy expectations ('Efficient'), and 89% of these get the Desired Results

50% use the system in a way that is efficient from their own perspective, in that they get what they want from it in a way that suits them and their lifestyle ('Reasonable'), and 96% of these get the Desired Results

The remaining 23% are Inefficient, they do not use the systems efficiently and do not get the best value for their lifestyle, and only 55% of these get the Desired Results.

Recommendations include:

Further research to develop the relationships between Behaviour Style in using the system, obtaining Desired Results, and likely influences on these identified in analysis.

Further analysis of energy advice provision to determine with greater certainty:

- the 'best practice' case study examples
- that best practice in setting heating controls and thermostatic radiator valves

- in relation to room thermostats is identified  
That energy advice providers review heating system documentation provided by installers

**Source 10**

Staats, H., Harland, P., Wilke, H, (2004), Effecting Durable Change: A Team Approach to Improve Environmental Behaviour in the Household, Centre for Energy and Environmental Research / Leiden University, Netherlands.

**Aims of study**

To examine the effects of participation in the Eco Team Programme (ETP) on changes in environmental behaviour and environmental resources (such as the weight of garbage disposed of and the consumption of gas, electricity and water). The study considered both short (immediately after participation) and long term effects, and investigated the expectation that the information/advice, feedback and social influence factors built into the programme would have a positive impact on the strength of intentions underlying behaviour change, irrespective of previously existing habits.

**Methodology****Sample**

445 people who were ready to start ETP were asked to participate also in this research. Of this group 289 completed questionnaires prior to start of ETP, 205 at end of ETP and 150 of these also completed a third questionnaire 2 years later. Of this sample of 150, average age was 52 years, 82% were women (because ETP recruitment was mainly through women's organisations), and they were of a higher income and educational level than average.

**Description of study approach**

A three year longitudinal study of the effect of the Eco Team approach on environmental behaviour.

Eco teams are an intervention package combining information, feedback and social interaction in a group. They are groups of 6-10 people who usually already know each other as neighbours, friends, club members etc. They meet monthly to exchange ideas and experiences, and use a workbook to work through 6 themes (each for a month): garbage, gas, electricity, water, transport and consumer behaviour. Savings are recorded in workbooks, enabling participants to monitor own progress and that of team. This data is also recorded centrally by Global Action Plan, and Teams are able periodically to review progress of all the Teams in the Netherlands. The ETP lasts 8 months.

**Results**

ETP participants changed half of the 38 behaviours examined, with corresponding reductions in the four physical measures of resources use. These improvements were maintained or enlarged 2 years after completion of the programme, amounting to 7% savings in water consumption and 32% in solid waste.

A detailed analysis of one behaviour (means of transportation), suggests that change can be predicted from the interplay between behavioural intention and habitual performance before participation, and the degree of social influence experienced in the Eco Team during participation.

The ETP is rather demanding, both for participants and the organization that disseminates and runs such a programme. The demands on participants results in a tendency to recruit those who are already more pro-environmental than average. One possible conclusion is that a less demanding programme might appeal to a broader segment of the population, cost less to run and achieve bigger changes due to lower initial level of pro-environmental behaviour of participants.

**Source 11**

Schultz, Nolan, Cialdini, Goldstein and Griskevicius (2006), The Constructive, Destructive and Reconstructive Power of Social Norms, research article for Psychological Science, USA.

**Aims of study**

To explore how normative information may differentially affect an important social behaviour depending on whether the message recipients' behaviour is above or below the norm. Specifically to test the predictions that:

Descriptive normative information would decrease energy consumption in households consuming more than the neighbourhood average – indicating the constructive power of social norms (and that normative information can foster pro-environmental behaviour)

Descriptive normative information would increase energy consumption in households consuming less than the neighbourhood average (the boomerang effect) – indicating the potential for destructive power of social norms

Descriptive normative information plus an injunctive message (that other people approve of low-consuming behaviour) would counteract the boomerang effect in households consuming less than the neighbourhood average – indicating the reconstructive power of injunctive messages to eliminate undesirable effects of descriptive norms

**Methodology****Sample**

290 households in San Marcos, California, with visible energy meters, selected from 3 census-block groups and notified through mailing (offered opportunity not to participate, but none did). Half were randomly assigned to receive the single or combined message. Just 3 households withdrew from the study after the first stage.

**Description of study approach**

Prior to intervention, research assistants read the household electricity meters twice within 2 week period. The difference gave the baseline measure of daily usage.

Two weeks later a third reading was taken and written message left on the door, reporting energy consumption during from the baseline period.

One week later a second doorhanger was distributed, containing normative feedback between the second and third reading. A fourth reading was taken at the same time

A final (fifth) meter reading was taken 3 weeks later.

For households in the descriptive norm only group, the information on the doorhanger was their own consumption (kWh/day), the consumption of the average household in the neighborhood in the same period, and suggestions on how to save energy.

The descriptive plus injunctive group got the same plus an emoticon showing a happy

face if they had consumed less than average, and a sad face if they had consumed more.

**Results**

The findings of the research were highly consistent with the predictions, providing a potential explanation for the mixed results of normative messages in field contexts

**Source 12**

Kidd, A. and Williams, P., (2008), The Talybont Trial – Exploring the Psychology of Smart Meters, The Prospectory.

**Aims of study**

To introduce clip on smart meters (real time displays) into 10 households for a 4 week period to study how it affected awareness, behaviour, attitude and actual consumption.

**Methodology**

Talybont on Usk is aiming to be a carbon neutral community and needs to reduce energy consumption in its 300 homes, as well as generating more from renewable sources. The Energy Group ran this trial using Efergy Smart meters for a month.

**Sample**

10 households used Efergy meters, and were monitored against a 10 household control group. Households ranged from 2 to 5 bedroom homes, and 2 to 4 occupants. 4 households had children with ages from 7 to 16. Only 2 had electricity for their main heating (night storage heaters) and one of these also has electric water heating.

**Description of study approach****Trial households:**

An electricity (main) meter reading was taken in all households one week before the start of the trial, a second when the smart meters were installed and a third 3 weeks later at the end of the trial.

There was a brief demonstration of how to use the monitor, change its settings and access its memory, and a user manual provided by the supplier. The researchers visited again at the end of one week to check all was OK, and 3 weeks to collect the meter and interview the users about how they had used the meters, whether they had found it useful, whether they had changed their behaviour and their motivation for joining the trial in the first place. A brief audit was done to collect data on household and home size, sources of energy, main appliances and hours of use, and a note made of any days spent away from home and overnight visitors.

**Control group:**

Households were e-mailed weekly to collect meter readings and finally to ask them to complete a short online audit of their household appliances and occupancy at the end of the trial. They were also asked if taking weekly readings had had any effect on their awareness or behaviour.

**Results****Quantitative:**

9 of the 10 households reduced their electricity consumption over the 4 week period relative to the 1 week trial period. The range was between 1% and 29%, with the average across all 10 of 9% reduction, including the 10<sup>th</sup> household's consumption which rose by 14%.

In comparison, the control group increased consumption during the trial by an average of 5%, with 5 increasing and 5 reducing consumption. Interviews indicated that taking meter readings alone helped some of the control group to reduce consumption.

#### Qualitative

The majority of households were enthusiastic about the positive effects, in particular that their electricity consumption became 'visible' for the first time, and felt that the real-time readings had a dramatic effect on their awareness and understanding of it.

The meter appeared to have the greatest impact in the first few days, and this was mainly to highlight to households the 'spikes' of high consuming appliances. However this did not complete the picture in terms of which appliances used most in total (for example by comparison with low power appliances on for long hours). Households were frustrated by not being able to identify exactly which appliances were on at any one time, and which were the biggest consumers over time.

Similarly without a benchmark of normal consumption to compare with, the impact on motivation for long term savings was limited. The 'memory' aspect of the meter appeared to be insufficiently user-friendly.

## 9. Contact

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