Affordable Warmth in 'Hard to Heat' Homes: a progress report

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EXECUTIVE SUMMARY

This report is a follow-up to the original 'Affordable Warmth in Hard to Heat Homes; finding a way forward', funded by the Eaga Partnership Charitable Trust and published in February 2002. It indicates the current scale of the problem of hard to heat homes; those with non-cavity walls or off the gas network, or both, using House Condition Survey data published in 2003. It reviews the activity that has taken place to develop solutions to fuel poverty in hard to heat homes, and assesses this against the work plan devised in the original report.

There are now 7.7 million non-cavity wall homes in the UK, representing 31% of all homes. The problem is most acute in Wales, where 47% of dwellings are estimated to be of solid wall construction, but the statistical basis for this is probably the least robust of the four nations.

NG Transco report approximately **4 million dwellings off the gas network** in Great Britain, of whom 21% live in communities where connection may be viable at reasonable cost.

Approximately 1.1 million dwellings in Great Britain are both non-cavity wall and off the gas network.

Figures for fuel poverty in hard to heat homes can only be derived for England and Scotland. In England, 42.5% of those living in fuel poverty are in non-cavity wall homes and 27% are potentially off the gas network as they do not use gas for heating. In Scotland, 34% of those living in fuel poverty are in non-cavity wall homes and 51.5% are potentially off the gas network. 15% of English and 22% of Scottish households living in solid wall homes are in fuel poverty. Whilst there is a greater percentage of fuel poor living in cavity wall homes than in solid walls in both countries**, it is more likely that someone living in a non-cavity wall home will be fuel poor**.

The work plan proposed by the original project has been re-assessed. Progress has been made by various bodies, independently and without reference to this plan.

It is clear that where there are organisations who have a clear commercial or legislative role in improving energy efficiency, whether in hard to heat properties or otherwise, progress is being made. This is particularly demonstrated by the information on technologies and techniques available and the best practice examples being produced by and for social housing providers. Examples of these include the EEP for Homes 'hard to treat' technologies database and website, and the Sustainable Homes (Housing Corporation funded) 'Green Street' project. However, **the key requirement for social housing is improved ability to fund the more expensive and often individual measures required for hard to heat homes**. This requires more, ring-fenced, government funding.

Ability to fund 'expensive' measures, for which social housing providers can reap the few economies of scale available, is even more of a barrier in the private home-ownership market, where awareness of the benefits is lowest. There is a further barrier in that whilst the gas industry works in a close transporter-supplier relationship with the customer, there is no such relationship for the insulation industry, who work through (mainly independent) builders and installers. The original workplan recommended that the industry and its market needed full analysis in order to deliver a consumer friendly insulation solution for solid wall homes. No progress has been made in this key issue. **Market forces do not provide a solution for home insulation and government intervention is required.**

One way of moving forward, to enable policy makers *really* to understand the nature of the problem and the cost of solving it, as well as raising awareness amongst households, is to give every home in the country an energy rating. This needs to be carried out faster than the rate which would occur if the proposed Home Information Pack were to become law through the Housing Bill. **This report proposes adding to the workplan an item requiring the relevant Government Departments (ODPM, DTI, Defra and DoH) to commission a feasibility study into the options for a nationwide home energy survey, its potential costs and timescale for completion**.

The report also questions whether the Energy White Paper aim of 4.5m cavity wall installations by 2010 will divert effort from solving the problem of fuel poverty in hard to heat homes. If it does, it will mean that the government fails to reach its target to eliminate fuel poverty amongst vulnerable people by 2010.

It is estimated that 29% of the vulnerable fuel poor live in non-cavity wall homes. The government can only reach its target if it addresses non-cavity wall homes. It will not be able to use the excuse that it was 'not possible'. It is possible to address the problem - the knowledge and the understanding are all available. It *is* expensive relative to the current price of energy and it requires more effort to provide the market delivery mechanisms. It is difficult, but it is possible.

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ABBREVIATIONS

ACE	Association for the Conservation of Energy
BRE	Building Research Establishment
CO_2	Carbon dioxide
CSE	Centre for Sustainable Energy
DDU	Design and Development Unit
Defra	Department for Environment, Food and Rural Affairs
DoH	Department of Health
DTI	Department of Trade and Industry
EAS	Energy Action Scotland
EEC	Energy Efficiency Commitment
EEPH	Energy Efficiency Partnership for Homes
EST	Energy Saving Trust
FPAG	Fuel Poverty Advisory Group
HCS	House Condition Survey (prefixed by E, S and NI, for English, Scottish and Northern Ireland House Condition Surveys)
HECA	Home Energy Conservation Act
HHSRS	Household Health and Safety Rating System
HtH	Hard to heat
HtT	Hard to Treat (esp. Sub-group)
ISMI	Income Support and Mortgage Interest
NEA	National Energy Action
NES	National Energy Services
NHER	National Home Energy Rating
NIHE	Northern Ireland Housing Executive
ODPM	Office of the Deputy Prime Minister
OWP	Office for Work and Pensions
PIU	Performance and Innovation Unit
SAP	Standard Assessment Procedure
WHS	Welsh Housing Statistics

INTRODUCTION

In March 2002 the Association for the Conservation of Energy (ACE) published 'Affordable Warmth in Hard to Heat Homes: finding a way forward' (Pett 2002; referred to as "the original report" in this paper) [link to report on ACE website], which assessed the scale of the problem of fuel poverty in hard to heat homes and, as an output from a stakeholder consultation, presented a range of issues that needed action in order to move towards solving the problem.

Two years on, we felt that a substantial amount of activity had taken place and that the issue of hard to heat, hard to treat (or more accurately expensive to heat or treat) homes was out in the open. Policy makers know that to meet commitments such as those in the UK Fuel Poverty Strategy and HECA targets, hard to heat homes *have* to be addressed.

What evidence is there that this is the case? Reports from the House of Commons Trade and Industry Select Committee on Fuel Poverty (House of Commons, 2002) and the Fuel Poverty Advisory Group (DTI/Defra, 2003) comment on the issue, as does the DTI/Defra Fuel Poverty Group (link to website). The simple solution is to throw money at the problem but the exact amount and where it should be positioned for maximum benefit is a complex issue.

The work programme proposed in the original affordable warmth report addressed four main strands:

- marketing
- lifecycle benefits
- best practice dissemination
- skills and standards

This progress report has been compiled following interviews with many of the original stakeholders plus new contacts. These are listed in Appendix 1. It seeks to identify the progress made in moving towards a solution (or set of solutions) to hard to heat homes and to suggest what changes need to be made to that work programme.

The first part of the report reviews the scale of the problem using the new data from House Condition Surveys in England, Scotland and Northern Ireland, new fuel poverty reports, and the latest Welsh Housing Statistics. It incorporates, where available, subsidiary data developed through additional analysis and modelling of House Condition data to incorporate fuel poverty calculations. In this way we hope that the revised information presented in this report will assist those seeking to target the limited funds currently available to those most in need.

The report goes on to assess progress made in two ways; in policy, research and programme development, then against the workplan as indicated above, discussing the reasons for progress and more importantly lack of it. The report identifies further work that should be included in the programme, and finishes with conclusions and recommendations.

CHAPTER 1: THE SCALE OF THE PROBLEM

This chapter provides the latest available data on hard to heat homes and compares them with the data in the original report. Appendix 2 gives further information on the limitations of the data, more information on sources, and an example of the method used to derive characteristics of hard to heat homes from the published figures.

The publication of three House Condition Surveys (HCS) for Scotland, England and Northern Ireland in 2003 was the prime mover for this progress report. With new, hopefully more accurate, figures to compare with the previous report, there is an opportunity to make a more reliable analysis of the size and cost of the problem of dealing with hard to heat homes.

Non-cavity or "solid" wall homes

The first task is to update the figures on non-cavity wall for each of the four nations. These are shown in Table 1.

Table 1: Total and non-cavity wall dwellings for UK 2001-2

		Figures available in 2003		
Nation	Survey date	Total dwellings	Non-cavity dwellings	Non-cavity %
England	2001	21,140,489	6,330,374	30
Scotland	2002	2,192,000	576,000	26
Wales	2002	1,281,000	603,863	47
N.Ireland[1]	2001	647,600	200,000	31
UK		25,261,089	7,715,237	31

Data: England 2001 (ODPM 2003), Scotland 2002 (Scottish Exec 2003), Wales 2002 (Welsh Housing Statistics 2002), N. Ireland 2001 (Housing Executive 2003)

How do these figures compare with the previous report? The main consideration is that they are more accurate, as "non-cavity" or "solid wall" is now reported by England, Scotland and Wales, and the Northern Ireland Housing Executive (NIHE) have kindly provided an estimate based on their survey data. Before our previous report, which modelled available data, observers had to rely on the number of pre-1919 homes as a proxy for solid wall construction; the detail in Appendix 2 gives an indication of the amount by which using that proxy under-estimated the scale of the problem. Compared with the original report, 31% of UK housing is non-cavity compared with the original estimate of 36%. However this is largely due to a change in the reported figures for Scotland, which were over-stated in the previous reference used. The conclusion is that there is little change in the actual number of non-cavity wall homes in the period since the previous house condition surveys were produced, and that Table 1 is a realistic assessment of the scale of the problem.

[1] This figure includes 161,500 of solid wall construction 38,900 dwellings that have partial cavity wall insulation (i.e. mainly cavity wall extensions on solid wall houses)

This can be shown in graphical form in Figure 1.

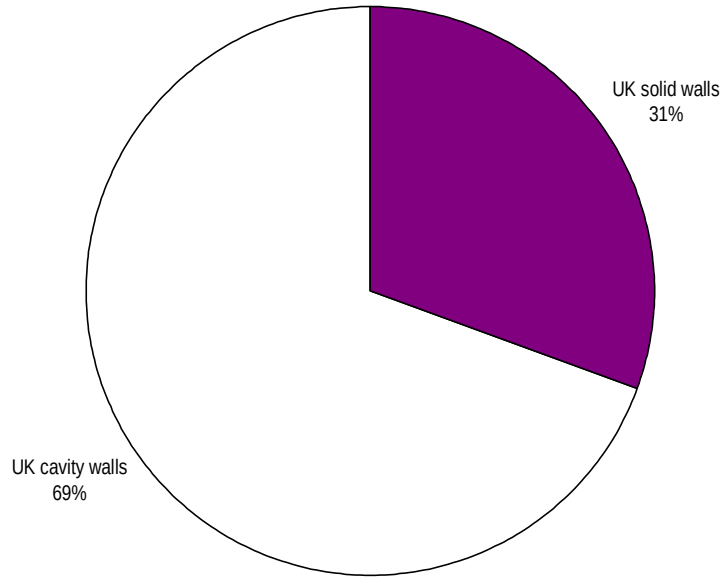

Figure 1: Solid walls as a percentage of total UK housing

Scotland and Northern Ireland have reported the number of homes with external or internal cladding in their HCS (71,000 and 26,290 respectively) making a reduction in the number of non-cavity wall homes in need of attention. However, hard to heat homes also covers cavity wall dwellings that are unable to be filled, mainly for reasons of varying wall height or location in an area of driving rain. The customary estimate for this is 10% of the cavity wall stock. This would add a further 1.75 million homes to the hard to heat total, making 9.4 million homes, or 37% of the total stock.

Homes not connected to mains gas (off-gas network)[2]

The figures supplied in 2002 by Transco to the Fuel Poverty Advisory Group (FPAG) show that approximately 4 million homes in Great Britain are off the gas network. Transco has carried out a substantial mapping exercise so that they have information at post-code level on whether dwellings are connected.

Important work has been undertaken to assess the size of the problem at the level of communities. Table 2 shows the number of households in communities (defined as fifty or more dwellings) at various distances from a main gas connector, and the average amount per dwelling that it would cost for connection. This is important as it addresses the issue of "infills", estates that were built at a time when other heating systems were as attractive and the provision of gas, even though it was easily accessible, was not thought a benefit to the community. What has not been assessed is the extent to which solid wall houses are included in these "relatively easy to connect" communities.

[2] In this section, most figures used are for Great Britain rather than the UK, as Northern Ireland has only recently obtained a gas connector and the market for gas heating is entirely different from the rest of Britain.

Table 2: Off gas network communities and distance from mains

Distance from mains	No. of households	Estimated average cost of connection (exc. CH)
<2 km	400,000	£824
2 km < 7 km	300,000	£2,324
>7 km	160,000	£4,167
Total in communities	860,000	
Total households in groups of less than fifty dwellings	3,140,000	

(Data from Transco, 2002)

The House Condition Surveys and other Housing Statistics do not show a figure for "not connected to the gas network" but they do show those who do not use gas for heating. Table 3 shows estimated numbers (by nation) of homes using gas for heating and the comparison of off-gas figures, and displays the considerable difference in profiles in the four nations.

Table 3: Comparison of off gas network and non-gas heating dwellings

	Use gas heating		Do not use gas for heating		Off gas network
England	17,599,449	83.2	3,541,040	16.8	3,100,180
Scotland	1,526,000	69.6	666,000	30.4	618,000
Wales	958,290	74.8	322,710	25.2	281,820
N. Ireland	20,560	3.2	627,040	96.8	n/a

(Data from House Condition Surveys as before, Welsh Housing Statistics 2002 and NG Transco)

There appears to be a difference of the order of 10% between those who do not use gas and the figure for off the network. As other data including indicators of fuel poverty are shown for people without gas heating it can be reasonably assumed that those numbers are approximately 10% greater than the number off the gas network.

Both non-cavity walls and off the gas network

The most difficult group to find affordable warmth solutions for are those who are off the gas network and in solid wall homes. A reasonable estimate of the number involved can be obtained by further analysis of the underlying data.

Analysis of the 1996 EHCS by BRE for the DTI/Defra Fuel Poverty Task Force showed that 875,000 dwellings were both off the gas network and had non-cavity walls. Given that little change has been made to the gas network or the number of solid wall homes this figure can be taken as a reasonable estimate of the current situation: it represents 4% of the English housing stock. The figure for Scotland has been calculated using the scaling calculator on the number of off-gas homes in pre-1919 homes (147,000) as a proxy. This shows that there are approximately 190,000 (8%) solid wall, off gas network dwellings in Scotland.

There are no reliable statistics yet for Wales to establish the extent of the double problem, although the Review of Energy Policy in Wales (NAfW 2002) estimates that 47% of housing is solid wall and 22% is off the gas network. Comparison of the figures for Scotland and England shows that off gas network properties are no more or less

likely to be solid walled than those on the gas network, so the best estimate of off-gas solid wall for Wales would be 10% of the total stock or 128,000 dwellings.

These estimates are summarised in Table 4.

Table 4: Estimates of dwellings both non-cavity wall and off the gas network

	Non-cavity wall & off gas network
England	875,000
Scotland	190,000
Wales	128,000
Northern Ireland	n/a
Total for GB	1,193,000

CO2 emissions from hard to heat homes

Although the main focus of this report is on affordable warmth, or combating fuel poverty, the impact of these homes on the UK's carbon emissions must not be overlooked.

The original report showed that an end-of-terrace solid wall home with no wall or floor insulation, 25 mm loft insulation, double glazing and electric storage radiators merited a SAP rating of 24 and emitted 18.3 tonnes of CO_2 per annum. This is 3 tonnes p.a. more than the same specification home with unfilled cavity walls. The options of full insulation package (loft, tank, walls) or gas central heating and hot water system saved 8 and 10 tonnes p.a. respectively.

If all solid wall and off gas homes were treated with these simple measures, what would the CO_2 saving be? The results for England are shown in Table 5.

Table 5: Potential carbon dioxide saving by treating hard to heat homes

	England	CO_2 potential (Mt)	Cost of solution	Lifetime £/tCO_2
non-cavity, on gas	5,455,374	16	£8,183,061,000	13
potential for gas CH	441,000	5	£110,250,000	2
potential for connection <2km	400,000	4	£329,600,000	5
potential for connection 2km - 7km	300,000	3	£697,200,000	15
potential for connection >7 km	160,000	2	£666,720,000	27
Total	6,756,374	30	£9,986,831,000	

This calculation uses the following assumptions:

- non-cavity wall homes on the gas network get a full insulation package, and have an efficient gas central heating system already, so the saving is only 3 tonnes p.a. per household.
- homes not using gas for heating get efficient central heating systems, at a saving of 10 tonnes p.a.

- those identified as being 'within communities' (from Table 2) get connected to the network, the saving (without full insulation) is also 10 tonnes p.a. per house

These measures result in a total potential of 30 Mt CO_2 (8 MtC) saved per annum.

If the same assumptions could be made of the rest of the UK stock, then this would imply a total UK potential of 37 Mt CO_2 (10 MtC) per annum, but this does not take account of the full extent of differences in house type and extent of gas connection.

The cost of such a programme, based on the marginal cost figures given in the previous report, totals £10 billion - England, £12 billion - UK, but the annual costs per tonne of CO_2 saved provide some comparisons of measures in terms of value for money, especially compared with other programmes.

This illustration assumes that a number of solid wall off gas homes are included in the communities figure, but does not allow for an insulation package for them. About one million homes have still not been addressed under this regime; these may be off-gas cavity wall dwellings that can not easily be addressed by gas network extension. Further savings could be made by addressing the efficiency of the central heating systems currently installed, and by providing insulation packages to the rest of the non-cavity homes that have not otherwise been addressed.

This illustration suggests that whilst the *cost* of dealing with hard to heat homes is considerable, more work is justified to determine a more accurate estimate of the *value* of current insulation approaches compared with the alternatives. These are more extensive gas network extension, domestic renewable energy options and the cost of developing new technologies.

In the next chapter the figures on fuel poverty and housing are examined to identify the size of the task and progress to date in addressing fuel poverty in this sector. This will be followed by an assessment of developments in policy, networks, reports and projects.

CHAPTER 2: FUEL POVERTY IN HARD TO HEAT HOMES

This chapter assesses the progress made in understanding the issue of fuel poverty in hard to heat homes. The main sources of data are Fuel Poverty Strategy documents (UK and devolved nations), the DTI/Defra Fuel Poverty team, House Condition Survey reports and evidence to the Fuel Poverty Advisory Group. The National Assembly for Wales has commissioned work to assess the extent of and characteristics of fuel poverty in Wales, but this is not expected until mid 2004 and no new data have been included at this stage. This report will be updated to reflect the findings when they are released.

In this report, the definition of fuel poverty is taken to include those who need to spend 10% or above of their disposable income on all fuel needs to maintain adequate temperature in the dwelling. This means that where the UK Government has published two sets of figures, including or excluding Housing Benefit, those that exclude Housing Benefit and Income Support for Mortgage Interest (ISMI) have been used.

Fuel Poverty – latest available figures

In the previous report, the UK Fuel Poverty Strategy showed that fuel poverty affected 5 million households across the UK. The breakdown is shown in Table 6 below, together with the latest estimates, given by the Scottish House Condition Survey, the Northern Ireland Fuel Poverty Statement and the BRE "Detailed breakdowns of fuel poverty" based on the EHCS 2001.

Table 6: Comparison of fuel poverty figures reported in 2000 and 2003

	2000 reported	% h'holds	2003 reported	% h'holds
England	3,900,000	19.5	2,352,000	11.5
Scotland	738,000	35	369,000	17
Wales*	220,000	17	220,000	17
N. Ireland	200,000	33	203,000	33
Total UK	5,058,000	N/a	3,144,000	N/a

*Wales figures are based on HEES eligibility and are unchanged in this period.

The variation in the Scotland and Northern Ireland data may be partly due to changes in reporting methodology. The basis of the Scotland figure is the assessment under the Fuel Poverty Strategy definition, not the comparison with the method used for SHCS 1996 data. The figures shown are thought to be the most accurate reflection available of the current situation. The different ways of reporting between the two time series makes direct comparison statistically unreliable.

The main reasons given by Government for reduction in fuel poverty numbers are the fall in energy prices and the application of income policies, rather than the effect of energy efficiency programmes. The Warm Front evaluation has assessed the ability of the programme to remove people from fuel poverty and found it disappointing, although decreasing the depth of fuel poverty is an effect that is generally unquantified. The impact of the Central Heating programme in Scotland may account for the considerable fall in fuel poverty figures, although there is some scepticism about the data. Further analysis by Communities Scotland for the Scottish Executive will doubtless identify the trends more accurately.

Fuel Poverty in non-cavity wall homes

Both England and Scotland provide figures for fuel poverty in pre-1919 homes, and for fuel poverty in SAP/NHER bands. Strangely, the England figures choose to use the bands SAP under 30, 30-50 and over 50, when the average SAP in England is only 50.6. Hence the figures do not give a real view of the extent of fuel poverty in energy efficient dwellings. The Scottish treatment is bands where "high" is NHER 7-10, which would be the equivalent of above about 70 in SAP terms. The figures for pre-1919 homes have been scaled using the same approach as in Chapter 1, in order to give an estimate for all solid wall homes. The variation in the number of fuel poor in England using the scaling factors versus the reported figure for fuel poor in non-cavity homes is under 5%, and gives a more accurate view than using the pre 1919 figures alone.

The two pie-charts in Figure 2 below compare the situation in England and Scotland for solid wall buildings and for NHER/SAP bands.

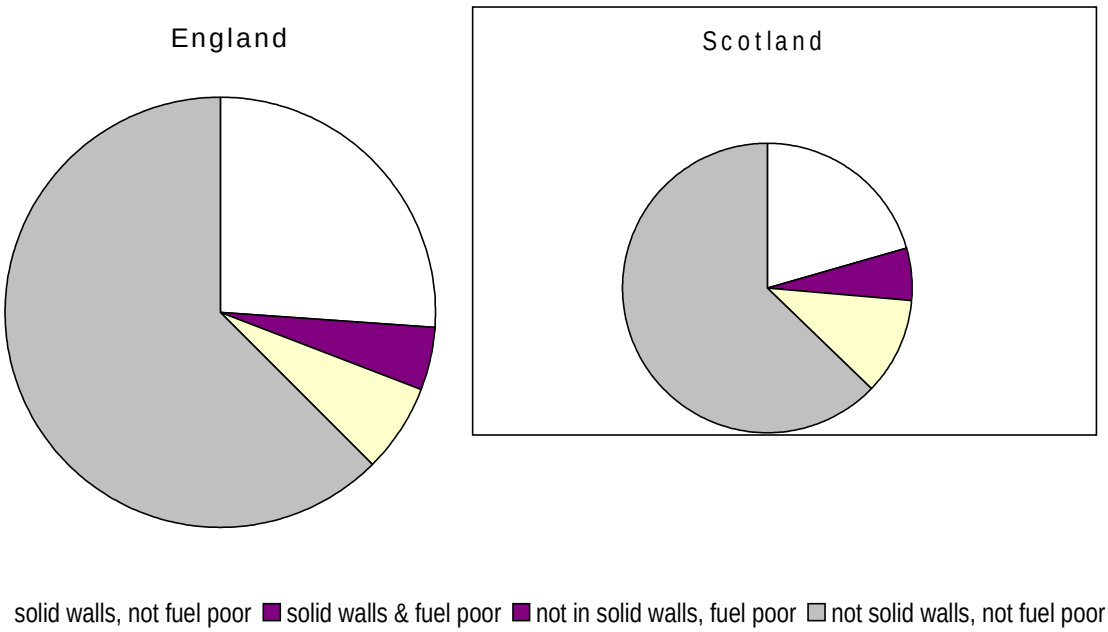

Figure 2: Incidence of fuel poverty in solid wall homes, England and Scotland 2001-2

The pie charts show that a similar percentage of housing for both countries is cavity wall and not fuel poor. The percentage for England has not changed compared with the original report (Pett 2002, Figure 2). There is a higher percentage of cavity wall fuel poverty in Scotland than in England, possibly relating to differences in gas connection, but variation in average income levels is also a factor. The chart shows that around 15% of English and 22% of Scottish households living in solid wall homes are in fuel poverty. Whilst there is a greater percentage of fuel poor living in cavity wall homes than in solid walls in both countries**, it is more likely that someone living in a solid wall home will be fuel poor**.

Despite the limitations of English SAP groupings made above, the chart in Figure 3 below shows the percentage of fuel poor versus non fuel poor in each category for both England and Scotland.

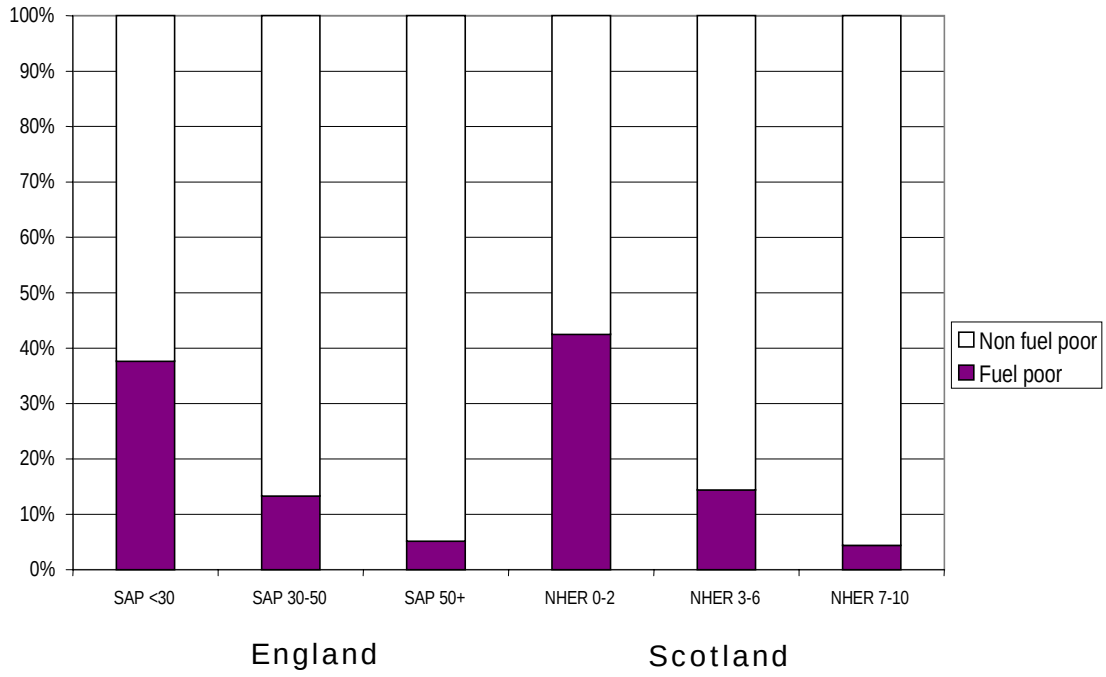

Figure 3: Fuel poverty and SAP/NHER bands for England and Scotland 2001-2

It can be seen that around 40% of those living in the most energy inefficient homes are fuel poor, with the figure falling dramatically as energy efficiency rises. It is notable, however, that some people living in what we currently consider to be highly efficient homes are still fuel poor; this is likely to be an issue of poverty rather than 'just' fuel poverty.

Fuel poverty and off-gas network homes

Most of the figures for fuel poverty in homes off the gas network are assessed from the data for fuel poverty by heating system, i.e. those that do not use a gas heating system have been taken as 'off gas' for the purposes of this analysis. Bearing in mind that the figures for off gas are also subject to estimation factors (as shown in Chapter 1), the following shows a picture, but should be used as guidance rather than evidence.

The diagram in Figure 4 shows that England has a smaller percentage of off gas dwellings than Scotland and that in Scotland, roughly half of the fuel poor do not use gas for heating. In England only just over a quarter of the fuel poor do not have gas heating. This is quite a different picture from the situation in Figure 2, with the solid wall figures, where 42% of the fuel poor were in solid wall homes. This may be partly due to the dominance of gas central heating as a fuel in England. The important issue for fuel poverty in England is that despite the calculations on gas central heating as an efficient heating option, the figures show that fuel poverty remains a problem amongst those with gas. The same statement does not apply in Scotland.

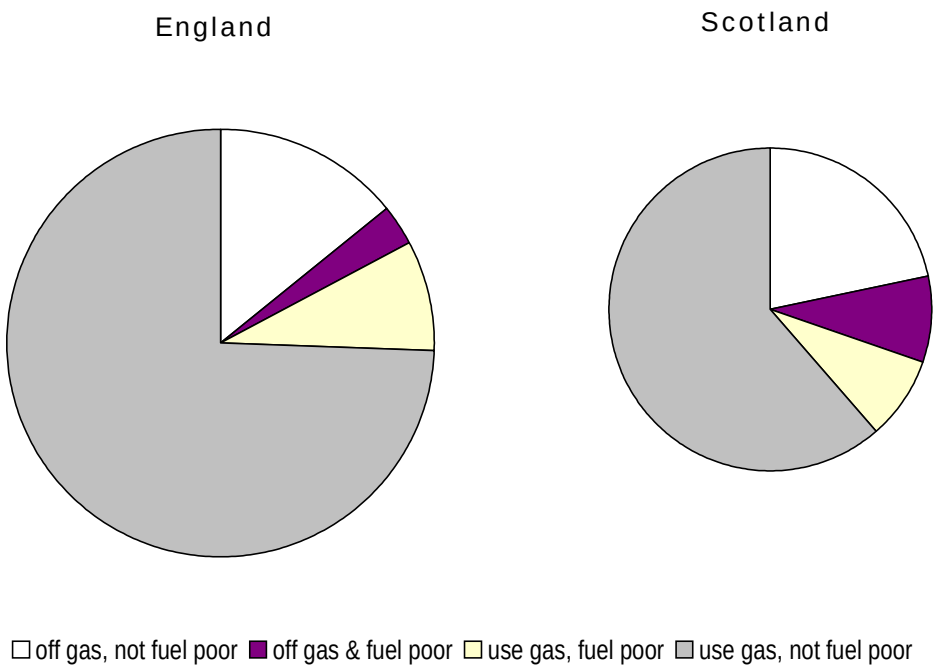

Figure 4: Fuel poverty in homes not using gas for heating, England and Scotland 2001-2

Part of the difficulty in comparing these figures is the difference in scale between the incidence of no gas heating and that of solid walls. Table 7 attempts to put the argument more clearly with the actual and derived data.

Table 7: Fuel poverty in hard to heat homes in England and Scotland

England	**Fuel poor**	**% of hth factor**	**Total**
Non-cavity wall	999,690	15.8	6,330,374
% of fuel poor	42.5		
No gas heating	636,000	18.1	3,514,000
% of fuel poor	27.0		
Total	2,352,000		
Scotland	**Fuel poor**	**% of hth factor**	**Total**
Non-cavity wall	126,420	21.9	576,000
% of fuel poor	34.3		
No gas heating	190,000	28.5	666,000
% of fuel poor	51.5		
Total	369,000		

This shows that 42% of the fuel poor in England are in solid walls, with 27% of the fuel poor having no gas heating. In Scotland, 34% of the fuel poor are in solid walls and 51% have no gas heating. This implies that the policy responses in England and Scotland need to be very different, as there are clearly different issues involved, possibly due to the differences in stock types and social factors as well as construction and gas network connection.

The scale of the combined problem – off gas *and* solid walls and in fuel poverty - cannot be established from the current data. In the original report, based on 1996 EHCS and 1998 EFUS, the estimated number of fuel poor in solid wall homes in England is comparable with the BRE data shown in Table 7. BRE further modelled the fuel poor / solid wall / off gas data for 1996 EHCS (these figures became available in 2002) to show that 402,000 fuel poor had neither gas nor cavity walls. If the number of fuel poor with this dual problem is much the same now, then 17% of the fuel poor are both off gas and in solid walls. However energy prices have fluctuated, and the number of fuel poor in solid wall homes or off the gas network has fallen, as shown below. Therefore a reduction in this number might be expected. If this figure has not fallen then it indicates that this group is particularly difficult to address by standard means.

Change in fuel poverty data

The detailed figures for fuel poverty over time are only available for comparison for England, shown in Table 8 below.

Table 8: Comparison of 2001 and 1998 fuel poverty (FP) data for England

England	FP 2001	Total 2001	FP 1998	Total 1998	% reduction in FP
Non-cavity wall	999,690	6,330,374	1,856,920	6,738,935	46.2
Off gas	636,000	3,100,180	912,394	2,595,973	30.3
Total	2,352,000		4,287,323		45.1

This table reverts to the EHCS 2001 data on the number of non-cavity and off-gas dwellings. It is somewhat surprising that the number of off-gas dwellings appears to have risen by 0.5 million homes in the 5 years 1996-2001. The most likely explanation is that there is a data error in one or both sets of figures, as it is unlikely that out of the net 0.76 million increase in the number of homes in England in that period, two-thirds have been built without a connection to the gas network.

A number of conjectures could be made about the drop in fuel poor in these situations and the relative roles of fuel prices and measures for the fuel poor in hard to treat homes. However, the uncertainty over the quality of the data mean such conjectures have no foundation.

Vulnerable fuel poor

Most aims or targets in reducing or eliminating fuel poverty limit the aim to “the most vulnerable”. These are usually taken to mean the elderly, the long term sick and disabled and infants. Figures for fuel poor amongst the vulnerable are not accessible for hard to heat homes, but they are by dwelling age, as shown in Figure 5 below. This shows that most of the fuel poor are vulnerable, and that a substantial percentage of vulnerable fuel poor (23%) live in pre-1919 homes. If we apply the scaling factor to take account of all solid wall homes in England, this gives an estimated 29% in solid wall homes.

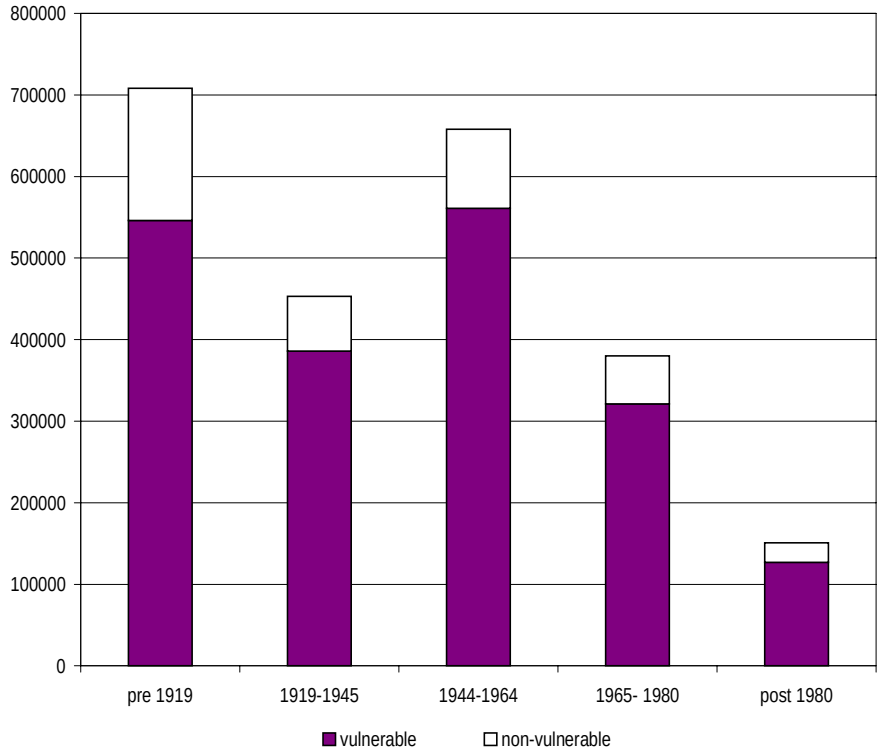

Figure 5: Vulnerable and non-vulnerable fuel poor by dwelling age (BRE 2003)

It is possible to read too much into these figures. For example the relatively larger percentage of non-vulnerable in pre-1919 homes might be worth comment. The fuel poverty figures are calculated on the amount of fuel required to heat the house to the standard, not the amount actually used. The figure above may include people with large country homes who do not heat the whole house; many of England's 214,000 listed domestic buildings are pre-1919 and these might be thought to require a large amount of fuel to maintain the standard heating pattern. Whilst at some stage energy efficiency of listed buildings might be considered as an issue, it will not be pursued further here.

Having reviewed the available data to update the problem of fuel poverty in hard to heat homes, the rest of the report looks at progress in policy and activity to address the problem and lead to long term solutions. There is then a comparison with the work programme suggested in the original report, followed by recommendations and conclusions.

CHAPTER 3: DEVELOPMENTS IN POLICY AND PROGRAMMES SINCE 2001

The UK Fuel Poverty Strategy was published in November 2001 and its main features were incorporated into the original Affordable Warmth in Hard to Heat Homes report. The main programmes included in that report were Warm Front (new HEES, Warm Deal), Warm Zones and the Energy Efficiency Commitment (EEC). Although some evaluation of those programmes is included, generally the programmes have not changed since the original report. They have continued to deliver the measures prescribed by their respective programme parameters, primarily cavity wall insulation and gas or other efficient central heating, plus draught stripping and loft and tank insulation. These programmes have undoubtedly had an impact on reducing fuel poverty, as can be seen by the figures in the previous chapter, but they are unable to have a great effect on fuel poverty in non-cavity wall and off-gas dwellings.

This chapter aims to give an overview of the activity and the key documents, but does not suggest that this is a full literature review.

Initiatives arising from the UK Fuel Poverty Strategy

The first annual review of the UK Fuel Poverty Strategy was published in February 2003 (DTI/Defra 2003), and summarised the approaches to setting targets in the devolved nations, as well as highlighting the reduction in fuel poverty figures, largely attributed to falling fuel prices and changes in incomes. Key areas to be considered were seen to be evaluations and reviews of existing schemes, budget requirements, further work on tackling hard to heat homes, skills shortages and rural fuel poverty.

Fuel Poverty Advisory Group

The main output from the UK Fuel Poverty Strategy Report is the establishment of the English Fuel Poverty Advisory Group (FPAG), which is charged by the Government to oversee the delivery of the Strategy. There is an equivalent group in Scotland and one for Wales is in development. During 2002 the FPAG received reports on a wide range of issues affecting fuel poverty, particularly reports from Transco and Centrica on extension of the gas network, and from the Energy Efficiency Partnership for Homes (EEPH) Fuel Poverty and other Groups (see below).

The first and second year reports from the FPAG are published on the DTI's Fuel Poverty website: [www.dti.gov.uk/energy/consumers/fuel_poverty/index.shtml]

There were nine key recommendations, including carrying out a package of measures a single time in each household to remove it from fuel poverty, new or expanded programmes to deal with hard to heat homes, and attention to the thermal comfort provisions of the Decent Homes standards.

Scottish Fuel Poverty Statement

The Scottish Fuel Poverty Statement was published in August 2002 (Scottish Executive 2002) and stated that the overall objective was to ensure "so far as reasonably practicable, that people are not living in fuel poverty in Scotland by November 2016". Two milestones were also published: to achieve a 30% reduction in the total numbers of fuel poor by 2006, and by 2010 to have achieved a further reduction (to be quantified). Another set of targets was established for provision of central heating through the Scottish Executive's Central Heating Programme. All local authorities are required to publish, as part of their housing strategy, a plan for addressing fuel poverty in their areas.

Northern Ireland Fuel Poverty Consultation

The consultation document on a Fuel Poverty Strategy for Northern Ireland was published in autumn 2003, with the consultation closing on 31st December 2003. The draft document contains targets for systematically eradicating fuel poverty by 2016, but the proposed definition used for fuel poverty differs slightly from the rest of the UK, and that for 'vulnerable household' also differs. The final version is awaited with interest.

Wales Fuel Poverty Targets

Progress on setting targets in Wales has been hampered by lack of data, and the National Assembly has prioritised data gathering through a Welsh Household and Dwelling Survey due in 2004. Meanwhile it continues to use the number of people eligible for help under New HEES as the proxy for fuel poverty. This proxy gives rise to some concern given the criticism of Warm Front for its failure to address fuel poverty effectively, when it uses the same eligibility criteria. Despite this, the National Assembly has consulted on a Fuel Poverty Commitment, the resulting Strategy being published in March 2003 as "Warm Homes and Energy Conservation Act 2000 – a Fuel Poverty Commitment for Wales"[3]. In this document it commits to the overall fuel poverty reduction targets and proposes to set a revised target when the new data are available.

Trade and Industry Committee Report on Fuel Poverty

The House of Commons Trade and Industry Committee took evidence and delivered a report on fuel poverty in the Parliamentary Session 2001-02. It aimed to assess the issue of fuel poverty in the UK, the contributing factors, and the response that is needed by Government. Whilst acknowledging the contribution of prices and income support to reducing the numbers in fuel poverty, it emphasised that

> "The only real long term solution is greater energy efficiency of the housing stock… Although concentration on energy efficiency measures represents a short term increase in expenditure, in the long term this is the only response that can help the environment, save money and alleviate the considerable suffering experienced by the four million or so fuel poor households in the UK."

The report argues that concern over the price of fuel is no longer an issue for most of the fuel poor, as they are poorly placed to take advantage of competitive pricing tariffs. As such, they suggest the environmental concerns over low fuel prices outweigh the benefits to the poor. However, the evidence given by energywatch quotes the potential to remove 1.3 million from fuel poverty by extending the gas network, and the committee recommend that pilot projects be funded as soon as possible to assess the impact of gas network extension.

In reviewing the problem of the energy efficiency of the UK housing stock, the report covers all the key issues: landlord-tenant in the private rented sector; Decent Homes standard falling below the current standard of most social housing, and hard to heat homes requiring comparatively expensive measures. The general tone of the report's recommendations suggest that these problems should be tackled even though they are difficult and possibly expensive, otherwise the fuel poverty target will not be met and the environmental benefits accruing from energy efficiency generally will be lost. It specifically comments that if the only options for hard to heat homes are costly, then "the nettle must be grasped".

[3] [http://www.housing.wales.gov.uk/pdf.asp?a=d10].

The report closes with an endorsement for increased focus on improving the energy efficiency of existing homes to "solve the problem once and for all" and by pointing out the barriers to paying for measures through over-regulated pricing structures. An element of cross subsidy from initiatives such as extension of the gas network to support a lower price of fuel for the fuel poor is something that the Committee saw as justified.

Energy Efficiency Partnership for Homes

The Energy Efficiency Partnership for Homes had been established for some time, but the winter of 2001-2 saw the creation of two entities reporting to the Fuel Poverty Strategy Group; the Data Sub-group and the Hard to Treat (Homes) Sub-group. The Data Sub-group worked for a short period (just over a year) to establish the additional data on fuel poverty that could be drawn out of the English House Condition Survey and to specify the type of analysis needed in future reports. It also attempted to solve the problem of providing targeted delivery of measures, by assessing data held in different databases and establishing the extent to which these could be usefully combined, given the constraints of the Data Protection Act. The final assessment was that no useful combination could be made. However, the work on targeting of measures continued, with CSE producing an immensely valuable Fuel Poverty Index, by combining House Condition and Census data, which allows prediction of higher then average levels of fuel poverty in an area at Ward level. Originally developed with SWEB support for the South West of England, this Index is now being extended to other parts of the UK (CSE 2003).

The Hard to Treat Subgroup originated from the Fuel Poverty Strategy Group with a small number of volunteer members of that group, but quickly grew to a large forum with representatives of most of the other Partnership Groups, providing a wealth of expertise to draw on. It took over the specification of the additional data needed to assess fuel poverty in the hard to heat sector, and the preceding two chapters have utilised this output extensively. Two pieces of work have dominated the programme for the last year. One is a report by Peter Iles of BRE that assesses the relative merits of different measures applied to hard to heat homes in terms of their energy use, annual cost and CO2 emissions. The second is an extensive project led by Keith Ross, also of BRE, that provides information on the best practice use of various measures for hard to heat dwellings, the costs and benefits of each and, importantly, the contra-indications (when not to use the particular measure). This database has been developed to have an internet based user interface, designed initially for housing managers. It is envisaged eventually to have a suitable interface for other users including architects and owner-occupiers. A link is established with the "Green Street" project of Sustainable Homes [www.greenstreet.org.uk], which provides detailed information to housing associations on sustainable refurbishment of common types of dwellings, including solid wall (stone and 9" brick) and tower block. The website is currently in test mode at

www.est.org.uk/bestpractice/hardtotreat/index.cfm.

Further work to be carried out under this programme includes an assessment of less common technologies, and the production of a set of case studies to enable social housing providers to tackle hard to heat homes more effectively.

Other Groups within the EEPH have contributed to the Fuel Poverty Strategy Group work programmes, among them the Local Authority Group and the Insulation Group, which has made a major contribution to the Best Practice database mentioned above.

Local Authority Initiatives

An important report was produced for the Partnership's Fuel Poverty Strategy Group on local authority activity in respect of hard to treat homes. This report, developed and written by Impetus Consulting (Impetus 2003), surveyed local authorities throughout the UK and attempted to identify projects and best practice relating to hard to treat properties [link to report on Partnership website].

Whilst much good practice has been established, the main barrier continues to be the cost of measures. Some progress has been made with the EEC partnership for refurbishment work in social housing, but approaches to the private sector have had limited success. The Country Home Energy Action Plan (CHEAP) project run by Stroud and Cotswold District Councils, funded by EST under the Innovations programme, is one of a small number focusing on the hard to heat sector, largely because of the predominance of solid wall, off gas network dwellings in the neighbourhood.

Attempts by other authorities to develop more innovative approaches have met with unexpected barriers. The most common problem at present seems to be the inability of local energy suppliers to cope with embedded generation schemes, despite the enthusiasm expressed by more senior management. Whilst these issues can be worked through, the time and effort involved means that local authorities, with very limited resources in this area, simply move on to develop schemes where barriers require less time and effort to overcome.

Energy White Paper

The Energy White Paper was published in February 2003 and sets out the UK's long term energy strategy. The White Paper followed an extensive period of research by the Performance and Innovation Unit (now the Prime Minister's Strategy Unit) and a consultation document. It deals with energy policy not fuel poverty, although policy options have generally assessed the effect on fuel poverty as part of the development of the paper. The document covers industrial, commercial as well as domestic energy policy, and security of supply and alternative fuels are key issues. The main goals set out in chapter 1 include "to ensure that every home is adequately and affordably heated" (DTI 2003, para. 1.36).

Reducing use of energy is the key factor that benefits all the strategic objectives. This is as relevant to hard to heat homes as it is to any other market segment. Solid wall homes are specifically referenced (in paragraph 3.6) and the paper indicated that developing or using new technologies, to overcome the problem of cost-effectiveness of existing technologies, will be required to meet the expected savings by 2020.

This problem of cost-effectiveness of technologies for hard to heat homes is one that leads to confusion and inactivity at present. Whilst there are other barriers, external insulation can be cost effective if carried out as part of a general refurbishment programme, as was shown in the original report. However, only about 6% of solid wall housing is owned by the social housing sector. Over 70% is owner-occupied. The initiative recently announced by the Carbon Trust to develop new technologies for insulating solid wall buildings (Carbon Trust 2003) has to be directed at this market. The design objectives should include both acceptability to the home owner and development of an installation industry to install (and maintain if necessary) the new products. Continuing development of highly efficient gas boilers will also benefit the fuel poor (provided the cost of maintaining them and their operational lifetime are both reasonable) but does not tackle those off the gas network.

However, for so long as fuel poverty is measured by the cost of fuel used in the home for all uses, a third area of energy efficiency - highly efficient appliances - is a valid way of reducing the cost of living for the fuel poor in hard to heat homes. A number of local authorities have quoted policies on providing A-rated appliances as a cost-effective way of improving energy efficiency in "difficult" homes.

The White Paper also mentions other measures that could prove beneficial to hard to heat homes, including the expansion of EEC and the development of Energy Services.

In a chapter devoted to "Energy and the vulnerable", the White Paper reaffirms the policy that "as far as possible no household in Britain should be living in fuel poverty by 2016-2018". It cites most of the programmes mentioned elsewhere in this report or the original one, and also addresses the issue of lack of mains gas, particularly in rural areas. However it does not address the issue of solid wall insulation, and one can only surmise that the need for new technologies in this respect is the most pressing problem in the Government's eyes.

Housing Bill

The Housing Bill, published as a draft for consultation in summer 2003 and included in the Queen's speech in November 2003 at the opening of the 2003-4 Parliamentary session, covered many areas that could promote more activity on improving energy efficiency in homes by requiring inspections and standards. However the two main issues affecting hard to heat homes are the Housing Health and Safety Rating System (HHSRS) and the Home Information Pack (HIP). Both of these measures have been trialled and are fully detailed as part of the Draft Housing Bill:

[http://www.odpm.gov.uk/stellent/groups/odpm_housing/documents/page/odpm_house_026042.hcsp].

The HHSRS would replace the Housing Fitness Standard, which identifies presence of defects or absence of key elements within a dwelling. The HHSRS takes the approach of evaluating the risk to the resident of various aspects of a building, including risk of cold. In this respect it is far superior to the Fitness Standard. The example given in the explanation of the standard and how it will work uses a hard to heat home and analyses what causes excess risk and what should be done to reduce it. It is unclear at this stage whether the recommendations would go so far as to bring a vulnerable person out of fuel poverty, or whether sufficient enforcement is available to make owners of such houses take real action. However, the approach appears sound.

The Home Information Pack (or Sellers Pack as it was originally termed) is designed to be provided by the seller of a house to prospective buyers in order to speed up the selling process. It includes a Home Energy Survey with recommendations for improving the property's energy efficiency. As with social housing, the time of change of occupier is the optimum time for physical improvements to the property. If further encouragement, such as rebates on Stamp Duty, can be given to house buyers to install energy efficiency measures, it may be a suitable means of getting home owners to make as many improvements to their home as possible. The problems foreseen include further impacts on the fuel poor if the value of their home drops because of its energy inefficiency and the cost of improving a hard to heat home. For those who prefer "market" solutions, however, this is probably the most appropriate option available at the present time.

The Housing Bill will be presented during the 2003-4 Parliament, and its progress can be monitored through the ODPM website as well as the UK Parliament site at http://www.publications.parliament.uk/pa/pabills.htm

Further research

In addition to the above, further research continues to be carried out by other interested parties. The projects funded by the Eaga Partnership Charitable Trust continue to address all issues relating to fuel poverty. Those relating to rural fuel poverty are particularly resonant with the hard to heat issue, and useful information is also transferable from some of the health and housing initiatives, including the BMA report on Housing and Health (BMA 2003). [x-ref to Eaga project list].

National Energy Action (NEA), National Energy Services (NES) and the Centre for Sustainable Energy (CSE) continue to develop practical projects and case studies that drive the knowledge of practical implementation forward, with NES having developed a Pocket Affordable Warmth Survey system, which combines a mini-energy survey with fuel poverty assessment.

Although this chapter has given an indication of the body of work on fuel poverty that has been produced in the last two years, many observers feel that the current wealth of information is inducing a form of 'analysis paralysis'. In the next chapter, we compare the activity that has been going on with the work programme proposed in the original report and ask why some things have progressed and others are still at the starting gate. The report then concludes with a reassessment of the work needed, identifying additional activity needed to remove the existing barriers to progress.

CHAPTER 4: PROGRESS AGAINST THE PROPOSED WORK PLAN

The original report included a diagram of a work programme considered appropriate to develop solutions towards eliminating the problem of fuel poverty in hard to heat homes (Pett 2002, Figure 4). Two years is not very long for progress in this area to have been made, but it is both encouraging and instructive to investigate what areas are being addressed or omitted and why.

This chapter therefore sets out the original recommendations for work that needed to be done, and assesses progress for each, then reconstructs the work programme in diagrammatic form (Figure 6), with the links between strands, to demonstrate where progress has been made. It then discusses possible reasons for such progress (or lack of it).

Progress on the original work programme

Table 9 below shows the reference number for the recommendation, its short name (as shown in the diagram in Figure 6), an explanation of the work and an assessment of the progress to date, based on communications with stakeholders and on desk-based research.

Table 9: Progress on individual items from the original work programme

Orig. Ref.	Short name	Outline	Progress
1.1.1	Understanding owner occupiers	Proposed more work was needed towards the reason why people might be persuaded to buy energy efficiency, other than cost saving	Little critical research, but there has been a switch in emphasis in advertising from EST from "saving money" to the "behaving badly" campaign
1.1.2	Marketing analysis	Full marketing analysis including delivery mechanisms, access to trusted sources of information, trust in companies & brands	Little progress
1.1.3	Awareness raising for Sellers Packs	Benefits of Sellers Packs need to be promoted	Home Energy Surveys part of Housing Bill. Need to get positive aspects promoted in the media
1.1.4	Enabling some DIY solutions	Accepting the enthusiasm of British public for DIY and work with retailers to provide suitable safe and reliable options	Insulation contracting industry remains unenthusiastic
1.2.1	Best Practice manual for social landlords	BP manual on how to address common house types	Has been developed by Sustainable Homes - Green Street - in conjunction with BRE/EEPH HtT group website of measures. Needs promotion.

Orig. Ref.	Short name	Outline	Progress
1.2.2	Higher standards for housing stock	Specifically, identifying ways to get social housing providers to bring stock up to standard with long-term refurbishment programmes	Housing Corporation promotes Planned Maintenance amongst its policies, RSLs have many other priorities to choose from and funding is still directed towards new build. LA priorities are frequently unclear. Decent Homes is the current standard; this does not require thermal comfort at a sufficiently high standard to address hard to heat homes adequately.
1.3	Addressing Private landlords	Full market analysis and identification of private landlords benefits and incentives required	Some LAs have addressed private landlords through a licensing systems and the Housing Bill promotes this concept, but little progress
2.1	Lifecycle benefits report	A credible well researched report analysing long and short term benefits is required for presentation to Government	Sheffield Hallam University (Goodacre et al 2002) has published a paper on the social benefits of warm homes, but does not emphasise the problem of hard to heat. The TIC Report on Fuel Poverty addresses similar issues and identifies hard to heat as key. The BMA sponsored report on Health and Housing addresses more of the issues. The all-encompassing paper is still required
2.2	Regional versions of lifecycle benefits	Regional supplements of 2.1 to guide regional and devolved administrations	No action
2.3	Marketing Strategy	Marketing strategy derives in part from 1.1 and 1.3; needed for the key to promoting energy efficiency in hard to heat homes as well as cavity wall ones	No progress, although some element of a strategy to achieve energy goals might be expected from the Energy White Paper. "Selling" it to the public is not considered.
3.1	Evaluation of grants and incentives	An overall analysis of grants and incentives schemes to provide best practice for scheme design	Evaluations of individual programmes start to consider wider issues (e.g. Warm Front), but an overall evaluation has not occurred

Orig. Ref.	Short name	Outline	Progress
3.2	Grants and incentives model	A project allowing modelling of grants and incentives to provide information on market development	An EU Altener project 'Invert' may provide some strategic information by 2005. May provide a basis for more detailed modelling specifically relating to the UK fuel poverty problem.
3.3	Scenarios for measures in devolved nations	An exercise for England Wales and Northern Ireland similar to the Communities Scotland exercise for the Scottish Executive that identified the cost of various measures applied to the Scottish Housing Stock and their cost and effects on fuel poverty.	The National Assembly for Wales is undertaking a different exercise that may give it similar useful information. The range of problems involved in addressing the English housing stock seems to prohibit the attempt to quantify the cost of measures. The NIHE is addressing the issue of non-cavity walls progressively, mainly through planned demolition
3.4	Database of grants and incentives	A database that can be queried both by those seeking grants for specific measures and for those designing grant schemes to fill gaps	The EST Grant Scheme Database provides information for key audiences on grants available for specific measures. There is no prospect of a tool to help grant scheme design, but could be used by a designer to test whether a proposed scheme already exists.
4	Distinction between approaches to fuel rich and fuel poor	Investigate the differences between these two markets and develop proper strategies for each.	Some awareness has been developed in designing schemes that address the fuel rich to ensure that they do not have a negative effect on the fuel poor, but little real progress has been made on understanding either group. No thought has been given to whether programmes for the fuel poor have a negative effect on the fuel rich.

Orig. Ref.	Short name	Outline	Progress
5.1	SWOT analysis of insulation industry	A 'strengths, weakness, opportunities, threats' analysis to aid the insulation industry in tackling the issue of hard to heat homes in a way that is acceptable to the public and to the public purse.	Lack of progress in addressing the weaknesses of existing insulation solutions to hard to heat homes by the industry has led to a call for proposals from the Carbon Trust for innovative technologies (which could include enabling technologies such as production and installation techniques not just new products)
5.2	Research / models for off-gas areas	Research or scenario modelling for mixes of renewables, CHP insulation and other technologies for different types of situation	Some projects were set up as a result of the FPS but little progress appears to have been made. The Welsh Assembly is currently testing some measures for off-gas. The Government's Design and Development Unit (DDU) aims to develop more projects that address multiple objectives cross-departmentally
5.3	Developing Best practice into standard practice	A feasibility study for a programme to translate case studies into standard practice.	The EEPH Hard to Treat Sub-group has identified technologies or applications where case studies are still needed, but dissemination of the information and getting them absorbed into standard practice still requires further research and an action plan
5.4	Low carbon view of standards for homes	A medium term view of what is required by 2020 in a low carbon future, and whether the measures installed now will help or hinder progress	A chapter in the BMA Housing and Health report addresses many of the key issues. Further research is required to bring the cost of such a strategy forward. Meanwhile lack of hard data seems to be an excuse to fail to invest in low carbon solutions
6.1	Developing a professional approach to warm homes marketing	This describes the role of the companies producing energy efficiency solutions to consider their role in marketing to the public, rather than to the installer, who does not have the trust or reputation to influence the consumer	Some of the energy suppliers are mindful of their role in this market and have included energy efficiency in advertising. Marketing support from manufacturers in the installation market is still virtually unknown, although technical support continues to be developed.

Orig. Ref.	Short name	Outline	Progress
6.2	Identifying skills and standards	Aims to identify the skills shortfall that needs to be filled to deal with hard to heat homes. Need multi-skilled people in this respect	New Sector Skills Councils unfortunately maintained the split between utilities and construction, so that while water and gas craftspeople may learn to share skills; roofing and building are treated entirely separately. Further work needed.
6.3	Consultation with Building Control over standards	Building Control needs to be engaged with the debate to create good quality workmanship, both in new homes and in refurbishment.	No progress known except in respect of new Building Regulations proposals calling for checks on air-tightness. Progress is not encouraging.
6.4	Guidance and standards for DIY applicable measures	DIY measures need to have a quality control regime, including best practice and guidance.	No known progress
7.1	EEAC standards	Advice standards and training for all advice providers being developed by EEPH	Energy Advice Code of Practice launched in 2003 and progressing
7.2	LA guidelines on solutions	Local guidance on how to deal with hard to treat homes following on from the work in 1.2	Some local initiatives occurring, especially with support from EST's Innovation Programme, but not on a systematic level.
8.1	Energy employment map	An understanding of the extent to which energy education is required within the full range of employment types.	Work proposed by the former Institute of Energy has not occurred. Possible that the new Energy Institute might resurrect the plan.
8.2	Seminar and CPD (LLL) programmes	Seminar programme for key professionals to link in with professional qualifications (esp. Continuous Professional Development or Life Long Learning schemes)	Evaluation of Health and Fuel Poverty projects indicates that seminars not necessarily the best route for specific schemes. Engagement with the professional institutes required for the more formalised approach. Will need a key issue relevant to that profession to tackle fuel poverty and hard to heat though.

Orig. Ref.	Short name	Outline	Progress
8.3	Incorporate energy in buildings into National curriculum	Develop an education package within the "sustainable development" part of the National Curriculum to ensure buildings and their thermal performance are better understood.	Not known whether progress made within national curriculum. The DTI website has a very accessible section for school age children and teachers on Renewable Energy but nothing relating to home energy use and the way we use energy in buildings or the home. CSE, npower and WWF are among those with initiatives to explain energy efficiency and renewable energy to schoolchildren through outreach programmes.
9.1	Demolition policy	Research to develop a strategy for owner-occupiers and private investors to raise thermal standards of their home or require demolition.	This interfaces with the HHSRS, but does not go as far as the proposal that NHER 8 should be the minimum standard. Respected observers have called for immediate energy rating of every house in the country.
9.2	Map demo projects and have "one per town"	Map existing energy efficient houses to have a demonstration house in every town - or at least within easy reach of home owners. The aim is to be able to demonstrate to non-professionals the benefits of a warm home	The number of demonstration houses is increasing, but slowly, and not in any structured way. The target to provide an example of retrofitting a typical local house could be made an aim of every EEAC provided they were also given the resources to support the project
9.3	Evaluate Carbon impacts of Fuel Poverty Strategy	Some doubts over whether the UK FPS conflicts with the UK Climate Change Strategy. Evaluation of carbon impacts recommended	The Energy White Paper considered the impacts of its recommendation on fuel poverty; the same still needs to be done as fuel poverty is still being used as an excuse not to act on energy incentives for the fuel rich.
9.4	R&D and innovations in warm homes solutions	Continuing R&D of new technologies for dealing with hard to heat homes	Carbon Trust has recognised the need and the opportunity in their funding programme. Other R&D has continued under the existing systems; new sustainable energy research priorities expected shortly with funding from the UK Research Councils.

The diagram of the work programme is reproduced in Figure 6 below but the boxes are now shaded to indicate progress. The original proposal showed the logical linkages needed to produce a strategic approach to solving the problem. It also identified five key strands or themes, most of which were interconnected. The strands were:

- Marketing and awareness raising amongst the public
- Bringing best practice into standard practice, particularly through the social housing sector
- Developing new solutions
- Robust arguments for stronger policy leadership
- Improving skills and standards

In looking at the revised programme, the piecemeal approach is obvious, but it is also clear that more progress has been made in the social housing sector and in areas relating to delivery of programmes such as grants databases, advice, and in engagement of energy suppliers with the issues. Some progress has also been made in research and development of new solutions. Why might this be?

In a project unrelated to this, but referred to in 3.2 above, the author has been developing a hypothesis for testing the response of stakeholders to programmes to promote energy efficiency and renewable energy in EU countries. Part of the hypothesis suggests that the action of the stakeholder depends partially on their ability to act in terms of the resources available to them (whether physical, intellectual, financial or other) and their goals for doing so. [www.invert.at] The progress that has been made in addressing fuel poverty in hard to heat homes tends to be amongst those stakeholders where there is already a policy framework and clear social responsibilities. These stakeholders include the social housing sector; companies and NGOs whose corporate goals include the elimination of fuel poverty and/or reduction in carbon emissions, and companies with a strong incentive, both market and regulatory, to address the issue (energy suppliers). The EEPH network has the potential to supply these groups with the human and social capital to enable progress.

Areas of little progress

In which areas is progress not being made? There seems to be a problem in developing a market strategy as well as a marketing strategy, and cost continues to be a barrier.

Market strategy

Whilst the Energy Saving Trust has undoubtedly carried out a thorough examination of its *marketing* strategy, there remain the wider implications of the *market* strategy, which includes delivery mechanisms and developing the consumers' need or desire for the product. It may be that this is outside the scope of the EST; should it then fall within the remit of the Carbon Trust, as it is really about the success of the British energy efficiency industry in delivering low carbon futures to domestic customers?

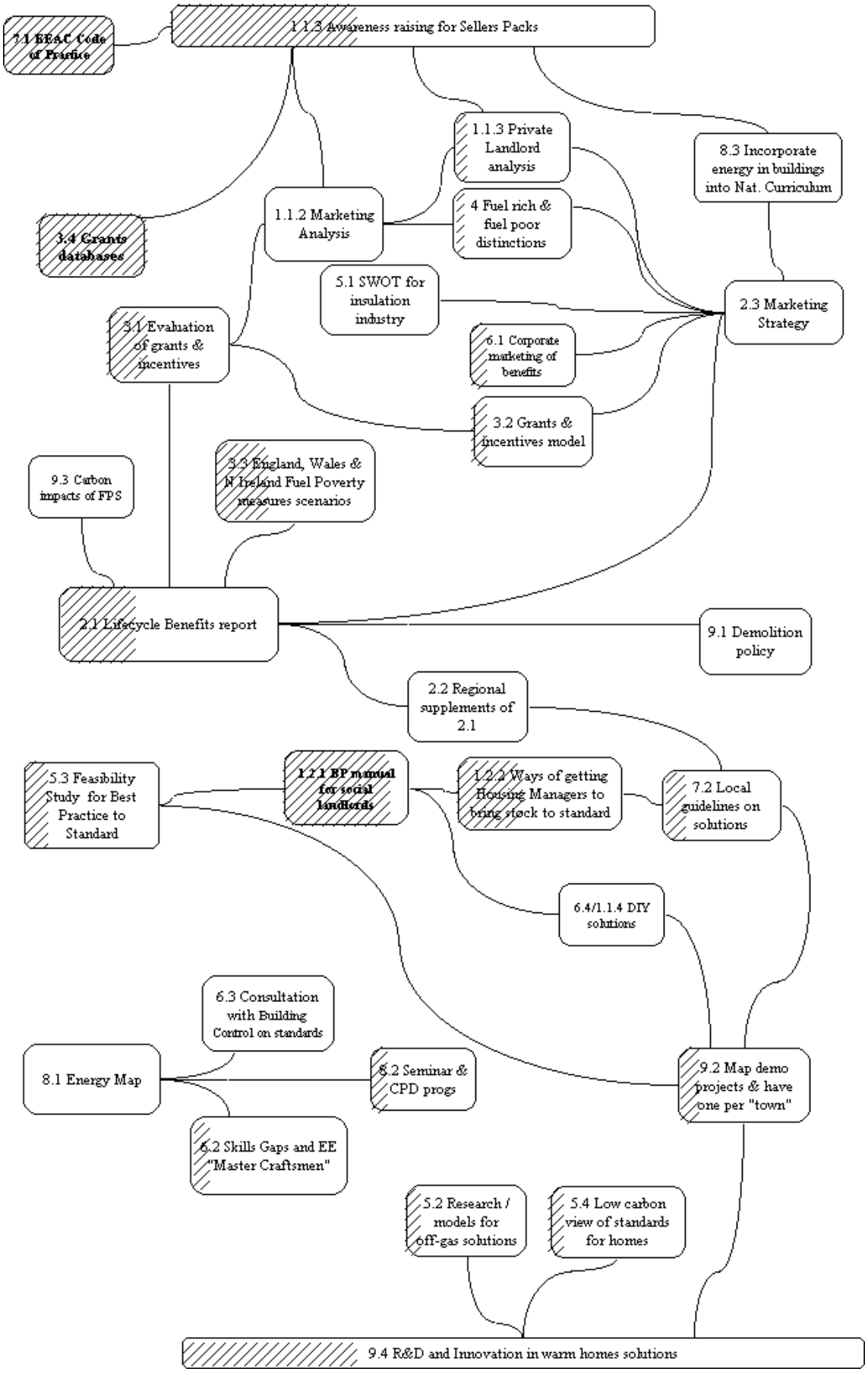

Figure 6: Original work programme with progress indications

Frameworks for "market" solutions

It is useful to compare the differences in industry frameworks for solutions to hard to heat homes. Both FPAG and DDU representatives have expressed the view that there are insufficient hard data to make long term decisions about non-cavity buildings, although the data on off-gas is becoming much better. Why might this be? Gas connectivity is a commercial issue; it has a monopoly commercial supplier that is known to discuss technical issues with private network operators. The gas network operators have the means and the ability under the data protection act to identify the data at postcode level. In contrast, non-cavity wall dwellings have been built over a long period of time, there is no public register, they are owned mainly by individuals, there is no common standard and no-one has responsibility for their upkeep (the owner does not have a statutory responsibility for upkeep other than at the most rudimentary level). There is no monopoly commercial interest with a direct relationship with the majority of house owners. The most influential group, taken as a whole, that has the largest ownership of domestic property (social housing operators, with regulatory pressures) is the only one taking direct action.

In dealing with hard to heat homes, then, we appear to have one problem where market interests can be engaged (off gas) with both network extension and new heating technologies, and one that cannot - insulation. Where do the insulation industries fit in? Unfortunately, installation of insulation is not within the role of the insulation manufacturers, so the end-user is not seen to be the ‘customer’. This means that there is no customer relationship built with end-users. A second problem would appear to be the long-standing relationships between insulation programmes and grants schemes, so that the industry itself has to rely on government programmes to provide incentives for people to install their products. This is not a market solution.

Cost and cost-effectiveness barriers

All stakeholders consulted for this update have raised a further issue; the main barrier to solving the 'hard to heat problem' is cost. At the current time, the solution for insulating hard to heat dwellings requires expenditure that is not deemed cost-effective under the 'rules' established for assessing cost-effectiveness of measures. These rules apply to all grant-type programmes including EST and EEC and are based on payback using discounted cash flow techniques, but fail to take account of benefits other than simple saving on energy bills. For social housing providers with refurbishment and planned maintenance programmes that protect their property assets, this is not necessarily a barrier. For the majority of hard to heat homes, it is. Whereas energy suppliers are incentivised by the EEC to deliver energy efficiency, there is no such incentive for the insulation providers. There is no market unless it is stimulated by the government, and no incentive for them to commit development costs when there is an existing product that meets the technical and physical specifications. Despite having a good product that meets the technical need, hard to heat homes are "costly" to treat in the current economic climate. The solution specifications were articulated by one of the stakeholders as:

> " . . .some magic substance that will provide good insulation standards, be easy to apply, not change the look of the building so that it is ok in conservation areas, and not take away inside space. At a lower price!"

This is effectively the design brief for a new technology for dealing with non-cavity homes. The Carbon Trust have put out a call for R&D projects to develop new solutions for solid wall thin skin buildings, such as 9 inch solid brick construction dwellings. Such a product might take years to develop, test and bring to market. This

implies that the government is not convinced of the value of funding an insulation programme for solid wall homes using the current methods. Either we (fuel poverty stakeholders) have to make a very well constructed, robust case for doing this work using current technologies, or we wait for a new solution to the problem.

Take-up by home-owners

There still remains the challenge of getting home-owners and private landlords to take up the issue. Private landlords can be addressed through regulation, and more work needs to be done really to understand the specific issues surrounding landlord failure to act, as many local authorities have developed good relationships with local private landlords. The House Condition Surveys show a very wide range in SAP ratings of private rented households, possibly due to the rise in the "buy-to-let" sector, and pressures on relocation for work mean more relatively modern houses (or recently owner-occupied ones) are being privately rented. The HHSRS and other parts of the Housing Bill give some assistance to raising standards in the private sector, but further understanding may be needed to address fuel poverty in this sector appropriately. To address the owner-occupier market we still need to develop the market that enables them to act by ensuring that sufficient specialists of good reputation are available to provide and install the necessary measures.

Developing the confidence of the British public in the building sector is a major problem, and needs work in conjunction with Building Control and with the construction sector Skills Council to start to address the issue. It is also likely to need incentives for owner-occupiers to take up the challenge; work has been done independently to identify possible incentives and was submitted to the Treasury consultation on this issue in September 2003 by many of the fuel poverty stakeholders.

Relevance of the work programme two years on

Is the work programme proposed still relevant? Examining the programme, everything is relevant to achieving progress, and many items are strategically necessary.

One item has been developing in importance that was not specifically mentioned in the original consultation: the issue of the energy rating of all homes. This would make a considerable difference to the ability of the stakeholders to identify the fuel poor in hard to heat homes and to quantify the problem more robustly for government. At EAS Conference 2003, both Dr. Brenda Boardman and Dr. Noel Olsen called for a nationwide survey to register every home's energy rating. Professor Peter Smith has called for a minimum standard of NHER 8 to eliminate fuel poverty (with a minimum income guarantee that relates to this standard this could indeed eliminate fuel poverty) (BMA 2003, pp51-56) Many observers have dismissed this saying it is "too difficult to do" and suggest that, eventually, the measures required for the implementation of the Energy Performance in Buildings Directive will achieve a nationwide register of ratings. This report questions this as despite the average "churn" (rate of turnover of buildings by owner-occupiers) being seven years, there is a substantial number of people who have lived in the same house 25 years or more. How difficult is it to carry out a nationwide energy survey? We have not only set council tax bands for every home in the country, but these are being reviewed at present for a revised council tax banding in 2007. As a first step, this report recommends that a feasibility study is commissioned by ODPM, in conjunction with DTI & Defra representing the Fuel Poverty Strategy, and DoH representing primary health care, in order to assess the options for such a survey, and to quantify the cost of various approaches. Once such a

survey has been completed, more robust decisions could be made about standards expected, programme costs and demolition policy.

It is the lack of detailed data such as a nationwide energy survey that leads to failure to develop a clear path for solving the issue of affordable warmth in hard to heat homes. There are many reports providing many solutions because each addresses a slightly different aspect of the problem. The Government would prefer a single clear solution, but it is not surprising that a single solution to a complex problem does not exist. The reluctance to make progress is partly due to lack of firm data on which clear signals can be based. This in turn is partly due to the absence of responsibility in any government department or market organisation for delivering data of a quality that can be used to support this decision making. Without such a commitment we should accept we have fuzzy data and get on and invest in delivering those measures that can be delivered.

Related to this lack of data is the suggestion that hard to heat dwellings will not receive the attention they merit until all the rest of the stock has been brought up to standard, sometimes called the 'low hanging fruit approach'. A brief assessment of when this might be can be extrapolated by work done by ACE as part of its contribution to the Treasury consultation in 2003. This examined the potential delivery of 4.5 million cavity wall insulation installations by 2010 (as proposed in the Energy White Paper). If all the effort and EEC money was directed towards this target (which would be required if it were likely to be achieved), ignoring the solid wall sector, one could anticipate that the majority of fuel poverty in cavity wall buildings might be eliminated. This would then leave around 1.2 million non-cavity wall households suffering from fuel poverty (England plus Scotland, from Table 7), assuming income and energy price issues were unchanged.

When read alongside the Energy White Paper, fuel poverty policies create tension. It is undoubtedly good to introduce cavity insulation to 4.5m walls, but it does not solve the economic and social issues of affordable warmth in hard to heat homes. Developing strategies for dealing with insulation of non-cavity homes, and particularly those that are unlikely to be connected to the gas network, is a more pressing problem that requires government investment in order to meet the Fuel Poverty targets - targets not aims.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

This report has examined the current situation relating to fuel poverty and non-cavity wall or off-gas network dwellings, and concludes that the data on dwellings is becoming more reliable, but so far efforts to reduce fuel poverty through energy efficiency measures are not showing in the statistics. This is partly because the House Condition Surveys are at best twelve months old, but also because fuel poverty programmes are failing to reach their target audience due to concentration on receipt of benefits as an indicator.

Thirty percent (7.7 million) homes in the UK have non-cavity walls, 4 million in Britain (i.e. excluding Northern Ireland) are off the gas network, and over 1 million are both. Fuel poverty affects 16% of those in solid wall homes in England, and 18% of those not on the gas network. However 42% of the English fuel poor live in solid wall homes, and 27% of them do not have gas heating. Most of the fuel poor are classed as vulnerable.

Current programmes do not address hard to heat homes, although individual projects where the need is greatest are being developed. One of the most impenetrable barriers is the cost both of solid wall insulation and of gas network extension and connection.

The programme of work recommended by the original project is progressing in areas where social housing and local solutions are being implemented, and where the stakeholders have the resources and incentive to make progress. Where market solutions are sought, the market is failing, mainly because housing is not a single market, and private home-owners (both landlords and owner-occupiers) remain largely unaware, uninterested and un-incentivised.

The main barriers to making progress in eliminating fuel poverty in hard to heat homes are perceived to be:

- lack of funds
- lack of commitment by government
- solutions are complicated, generally need multi-skilled building practitioners, and there is little understanding of the problem by builders
- awareness of the need by home-owners and the public generally

The simple solution, provision of money, would assist the social housing sector but not address the problem of owner-occupiers and the private rented sector. Commitment by government is hampered by conflicting policies and targets; the illustrations suggested in the Energy White Paper, for example, would leave little scope for targeting fuel poverty in hard to heat homes in the short-medium (to 2010) term.

Those aspects of the work programme that have received little attention to date are the very tasks that need to be undertaken in order to make this progress. To the list of tasks identified in the original report, a further one is added. This is a feasibility study to identify the cost and optimum method for achieving an energy rating for every dwelling in the country. This feasibility study would benefit policies within DTI, Defra, ODPM, DoH, OWP and Treasury, and should be funded accordingly.

The main conclusions of this progress report are:

- progress has been made, albeit in understanding the extent of the problem and the difficulties in solving it, rather than much practical response.
- the social housing sector has the incentive to act, but insufficient resources.

- other stakeholders have the knowledge to act, but insufficient resources and unclear delivery mechanisms.
- development of wider understanding and the practical skills of delivery, which would be even more complex if new technologies were to be introduced, are essential to the achievement of change but do not appear to be recognised by policy makers.

The work programme, with the addition of the task for national energy rating, provides the framework for progress in this area. The need for progress in the difficult areas is paramount, in order for a target for elimination of fuel poverty to be achieved. It is difficult, but it is possible.

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APPENDIX 1: STAKEHOLDER CONSULTATION

Stakeholders interviewed for the update of the Affordable Warmth in Hard to Heat Homes project plus those with whom more informal discussions have been held are shown below. Additional contributions from the EEPH Hard to Treat Group are gratefully acknowledged.

Graham	Ayling	SWEA
William	Baker	Centre for Sustainable Energy
Dave	Barton	Impetus Consulting
David	Colbourne	Sefton BC
Malcolm	Fletcher	Eaga Partnership
Eddie	Lafferty	NG Transco Affordable Warmth
Alan	Onslow	INCA
Bruce	Pittingale	Fenland DC
Scott	Restrick	Energy Action Scotland
Noel	Rice	Northern Ireland Housing Executive
Keith	Ross	BRE
Peter	Smith	Sheffield Hallam University
Denys	Stephens	Penwith Housing Association
Jenny	Wain	Sustainable Homes
Andrew	Warren	Association for the Conservation of Energy
Graham	Wood	Hockleys Surveyors
Pam	Wynne	Defra Fuel Poverty Group
Zoltan	Zavody	Energy Saving Trust

Comments and presentations made by speakers at relevant events have also been incorporated, without further formal discussion. Brenda Boardman, Richard Grant, Michael King, Peter Lehman, Noel Olsen, Linn Rafferty and John Chesshire are among these whose comments have been utilised.

Key issues from consultation interviews

This section lists the responses from those interviewed to two specific questions:

- What are the current main barriers to addressing affordable warmth in hard to heat homes?

- What one thing would make the difference?

A number in brackets after the statement listed below indicates the number of times this item was mentioned.

Main barriers:

- understanding / awareness of issues (particularly by the public or homeowners) (3)
- attitudes of installers (2)
- lack of recognition that they have to be addressed to reach 2010 target
- lack of leadership esp. in [insulation / building] industry
- inconvenience / disruption for occupiers when work is carried out (3)

- cost of solutions for solid wall dwellings (8)
- cost / payback time
- reluctance to demolish poor housing (below SAP 20)
- lack of simple, easy solutions
- lack of money
- need for whole street approaches
- need to have something invented that does a traditional finish maximum 1 inch thick and is easy to apply

"One thing"

- dedicated government funds (5)
- firm direction from government
- real cross departmental linkages to address fuel poverty - housing, energy, health, income
- action plan with numbers to form a route map
- extra credits for EEC2 to address hard to treat sector (2)
- change in industry approach / attitude to problem
- introduce something alongside HECA target that makes specific burden to deal with hard to heat homes / need a Best Value performance indicator for energy efficiency of council stock
- policy to demolish old houses when there are things other than insulation that make it hard to heat
- tax credits for improving energy efficiency of one's home
- hard to heat will not receive the attention it merits until all the rest of the stock is brought up to scratch

APPENDIX 2: MANIPULATION OF THE DATA SOURCES

This appendix sets out the background notes for the analysis of affordable warmth in hard to heat homes. It explains how the data sources have been used to produce the data supporting arguments in the main report.

The information in this report is drawn from a number of sources and compares, where possible, the data available in the winter of 2003 with the data drawn together for the original report.

The principal sources are:

- The English House Condition Survey 2001, ODPM 2003
- The Scottish House Condition Survey 2002, Scottish Executive / Communities Scotland 2003
- The Northern Ireland House Condition Survey 2001, Northern Ireland Housing Executive 2003
- Welsh Housing Statistics 2002 (National Assembly for Wales 2002) supplemented by the Welsh House Condition Survey 1996; where figures are anomalous, those of the WHS 2002 have been used. (The number of pre 1919 dwellings in 2002 appears to be greater than that in 1996 for example)
- Supplementary data on off-gas network from Transco and Centrica submissions to the FPAG (Transco 2002)
- Additional reports published or made available by DTI / Defra Fuel Poverty Team
- The UK Fuel Poverty Strategy (UK FPS) (DFTI / Defra 2001) and subsequent reports including devolved nations' statements and consultation documents.

It should be noted that the House Condition Surveys are not full surveys of every home in the country; the figures are derived from large sample surveys. Caution does need to be exercised when extracting data at too fine a level from these reports.

Differences in data reporting

The degree of development of detailed figures on fuel poverty since the original report is misleading; much of the work was produced from models based on older data. Only the fuel poverty work based on the most recent House Condition Surveys can be considered current, and that may be misleading due to the modelling used and changes in the way data has been collected. In particular some caution should be shown in comparing data across the different House Condition Surveys as only the highest level aggregated survey can easily be matched. For example, the bands used for reporting distribution of ages of housing differs in the later bands; Scotland uses NHER for reporting energy efficiency whereas the others use SAP; types of heating system differ and are aggregated in different bands. Part of the reason for some of these differences are the sample sizes and consequent low numbers in some data fields, leading to potential unreliability.

Status of fuel poverty figures

Communities Scotland is carrying out a more detailed analysis of the SHCS 2002 figures with respect to fuel poverty. This report is expected in March 2004. Preliminary estimates of some key figures have been made by the author to complete gaps in comparative data; we anticipate updating this report to reflect Communities Scotland's work when it is published.

Definition, collection and derivation of figures on hard to heat homes

In this report, the term 'hard to heat' has been limited to dwellings of non-cavity construction, those off the gas network, or both. No analysis has been made of those with a roof that cannot be insulated, as data is patchy. England reports 385,000 dwellings with no loft space (flat roof) and Scotland reports 95,000 flat roofs. It is not possible to assess how many of these dwellings are also hard to heat for another reason. It is unclear how pitched-roof lofts converted into additional living space have been counted in the survey data.

In the original report, the estimated number of non-cavity walled dwellings in the UK was 8.9 million out of a total of 24.5 million dwellings. This figure was modelled from age data in the House Condition reports, and was some 20% higher than the figures quoted by BRE in the Domestic Energy Fact File at the time, which were understood to be based on the number of pre-1919 dwellings in existence. This new report has the advantage of identifying the actual number of solid walls, and applying a scaling factor on the proxy data of pre-1919 houses to give a more accurate estimate of features of all solid wall housing.

The new House Condition Surveys give a basic count of solid wall and other non-cavity or non-cavity fillable constructions (referred to as "solid wall" for brevity). By assuming for all countries that all pre-1919 housing is solid wall, we can estimate a scaling factor that allows us to better gauge other data for solid walls from figures given for pre-1919 data. For example, the data is not published for solid wall houses with gas central heating, but this figure is available for pre-1919 housing. By knowing for each country how much more solid wall housing there is than pre-1919 housing, we can apply the scaling factor to estimate, for example, use of gas central heating in all solid wall homes.

The scaling factors are shown in Table 10:

Table 10: Derivation of scaling factors for estimating solid walls from Pre-1919 data

Country	No of Non-cavity dwellings	Pre 1919 housing	Post 1919 non cavity by deduction	Proxy multiplier
	A (from reference)	B (from reference)	C =A-B	A / B
England	6,330,374	4,494,633	1,835,741	1.41
Scotland	576,000	446,000	130,000	1.29
Wales	603,863	442,000	161,863	1.37
N Ireland	200,000	116,340	83,660	1.72
UK	7,715,237	5,483,483	2,231,754	1.41

It is of some concern that the scaling factor for Northern Ireland is so high, but this is partly because of the inclusion in the figures of homes with cavity wall extensions (as stated in the footnote to Table 1). It is otherwise gratifying that the published data supports the modelling assumptions made in the original report.

Scotland and Northern Ireland have included figures on insulated walls (both external/internal cladding and cavity wall filled); England has included cavity walls filled and unfilled but has not reported on externally or internally clad solid walls. Neither figure is available for Wales.

Comparison with original report figures

Taking into account the differences in data collection mentioned above, the figures in Table 1 can be compared with the figures shown in the original report, as displayed in Table 11.

Table 11: Total and non-cavity wall dwellings for UK 2000 and 2003 published figures

	2000 figures				2003 figures			
	Total	Non-cavity	Non-cavity %	Source	Total	Non-cavity	Non-cavity %	Source
England	20,371,000	7,274,000	36	EHCS 1996	21,140,489	6,330,374	30	EHCS 2001
Scotland*	2,250,000	623,000	28	SHCS 1996	2,192,000	576,000	26	SHCS 2002
Wales	1,265,000	569,250	45	WHS 2000	1,281,000	603,863	47	WHS 2002
N.Ireland	650,000	170,000	26	NIHE 2002 pers comm	647,600	200,000	31	NIHCS & NIHE pers comm
UK	24,536,000	8,636,250	35		25,261,089	7,710,237	31	

Note that the figures published for Scotland in the original report were subsequently amended as the SHCS 1996 showed that there were 623,000 solid wall dwellings (inc. homes of 'other construction') in Scotland, compared with 900,000 reported in the Housing Green Paper of 1999. This seems to be a more appropriate figure for comparison. The original figure for Northern Ireland includes only homes classed as solid wall, whereas the new figure includes 161,500 of solid wall construction 38,900 dwellings that have partial cavity wall insulation (i.e. mainly cavity wall extensions on solid wall houses). Differences in the figures for England are mainly due to movement from modelled figures to EHCS ones where 'solid wall construction' has now been reported.

It is not suggested that there is any great difference in the actual numbers of dwellings of solid wall construction in the UK, the difference is one of more accurate data collection and description.

Gas connection data

Where off-gas network data is unavailable or incomplete, a minimum figure has been arrived at by identifying data relating to the presence of gas fired heating. Most of the surveys detail natural (mains) gas separately from LPG, but some confusion is generated from the data label "Partial gas/other". As this number is generally small (of the order of 1% of dwellings), the figure has been ignored.

Lack of gas connection in solid wall dwellings is an example of a figure that has been derived from proxy data with the scaling factor.

For Scotland: the SHCS provides the following data:

Number of non-cavity wall dwellings	576,000
Number of dwellings (all types) not connected to the gas network	618,000
Number of pre-1919 homes	446,000
Number of pre-1919 homes with gas central heating	265,000

1) Dividing the number of non-cavity homes by the number of pre-1919 homes gives the scaling factor as shown in Table 1 = 1.29
2) Subtract the number of pre-1919 homes with gas heating from the total number of pre-1919 homes = the number of pre-1919 homes without gas heating. This equals 181,000
3) Use the scaling factor to estimate the number of non-cavity walls without gas heating = 181,000 x 1.29 = 233,758

This produces the proxy figure used in this report for solid wall homes off the gas network = 233,758.

As this figure is expected from the additional work on fuel poverty by Communities Scotland, we are very interested in seeing the figures derived from the survey's underlying data and how they compare with this estimate.

Additional Fuel Poverty Data

In addition to the data sources listed above, extensive use has been made of the detailed analysis of fuel poverty in non-cavity wall and off-gas network dwellings undertaken by BRE for the DTI/Defra Fuel Poverty Group and made available to the EEPH Hard to Treat Sub-group. A sample of this data is reproduced in Table 12 below, being the Table solely concerned with those both off-gas and solid walls.

The new fuel poverty data based on the more recent HCS reports does not include this level of detail, and specifically does not include off-gas/non-cavity wall data. Where appropriate and estimate of the current scale of the problem has been made by assessing available new HCS figures against the comparable figures of the BRE 1996 analysis and interpolating the likely changes on this 1996 detailed data. The problem of doing that is that the fuel poverty definition used by BRE is the full income (i.e. including Housing Benefit and ISMI) whereas this report, in line with the Right to Fuel Campaign approach, is concerned with fuel poverty defined on disposable income excluding Housing Benefit and ISMI.

Table 12: Sample of the BRE data on fuel poverty in hard to treat homes based on the EHCS 1996 (DTI/Defra November 2002)

Fuel poverty (based on full income) characteristics for households in dwellings not connected to mains gas supply and without cavity walls (England 1996)						count (000s)
	Characteristics	**Percentages**		**Numbers**		
	Amount of income spent on fuel	**up to 10%**	**> 10%**	**up to 10%**	**> 10%**	**Totals**
	owner occupied	64.9	35.1	351	190	541
	private rented	38.5	61.5	80	128	208
	local authority	30.7	69.3	33	75	109
	RSL	61.5	38.5	11	7	17
	Total tenure	54.1	45.9	473	402	875
	Private sector	57.5	42.5	430	319	749
	Social sector	35.0	65.0	44	82	126
	Total soc/priv sector	54.1	45.9	473	402	875
	Urban	42.5	57.5	128	173	301
	Rural	60.3	39.7	346	228	574
	Total urban/rural	54.1	45.9	473	402	875
	House	53.2	46.8	374	329	702
	Flat	57.6	42.4	99	73	172
	Total dwelling type	54.1	45.9	473	402	875
	Pre 1919	58.0	42.0	369	267	636
	1919-1944	35.2	64.8	36	66	102
	1945-1964	36.2	63.8	17	30	48
	1965-1980	44.5	55.5	27	33	60
	Post 1980	85.0	15.0	25	4	29
	Total dwelling age	54.1	45.9	473	402	875
	Non-mains gas CH	66.9	33.1	248	122	370
	Storage	53.5	46.5	148	128	276
	Electric room heaters	29.6	70.4	44	105	149
	Solid room heaters	42.9	57.1	31	42	73
	Other room heaters	44.8	55.2	3	4	8
	Total heating	54.1	45.9	473	402	875

In this table, the column headed >10% indicates those in fuel poverty. Shaded areas indicate figures that are small and may be statistically unreliable.

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