Achieving our potential:

an analysis of area-based approaches to improving energy efficiency in Scotland's homes

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The Ashden Awards for sustainable energy

Scottish and Southern Energy

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Energy Agency is an independent charity which aims to reduce carbon dioxide and other greenhouse gas emissions through energy efficiency, micro renewables and promotion of sustainability.

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Scottish and Southern Energy's core purpose is to provide the energy people need in a reliable and sustainable way.

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Executive summary

This report analyses the effectiveness of an area-based, non-means-tested approach to tackling fuel poverty and reducing the environmental impact of housing in Scotland. The analysis is based on three home insulation projects utilising this approach.

The first of these schemes was in Hadyard Hill, South Ayrshire, which focussed on the delivery of free insulation measures to all households in the community. The project, developed in conjunction with South Ayrshire Council, was funded by Scottish & Southern Energy and managed by the Energy Agency. It won an Ashden Award for its innovative approach in 2008. The other two schemes, in Fintry and Girvan, followed a similar approach.

Findings

This analysis found such an approach can prove to be beneficial both in terms of environmental and social impacts, and in the cost-effectiveness of its delivery.

The main indicators of the success of the projects include:

- 76% of the target group accepted and received energy surveys,
- Almost 40% of properties in the areas received at least one physical measure,
- For every £1 spent in Fintry £1 was saved by those who received energy efficiency measures, compared with the Scottish Government's Warm Deal programme which delivered such a saving at a cost of £2.45,
- Average annual bills fell by between £180 and £600 due to installed measures,
- Girvan, an area with only 3,000 households, saw an increase in annual disposable income across the community of over £560,000 (inclusive of estimated behavioural changes),
- The local incidence of fuel poverty fell by between 13% and 26%,
- Normally 'hard to reach' fuel-poor households were identified and supported,
- In Fintry the cost to save one tonne of carbon dioxide was £196 compared to £350 under the Warm Deal,
- Average energy ratings improved by around 1 NHER point in each area,
- Annual energy usage of treated households fell by between 18% and 24%,
- On average households saved between 1.3 and 3.1 tonnes of carbon dioxide per annum, averaging out at around a 19% reduction in emissions.

A variety of factors contributed to the success of this approach including:

- An increased potential for intensive marketing leading to increased awareness,
- Increased trust through work with local intermediaries and word of mouth,
- A coordinated approach to funding bringing together all available sources,
- Economies of scale bringing about increased productivity,
- A non-means-tested approach ensures more fuel-poor households are reached,
- Removal of the administration costs of means testing,
- The provision of measures free of charge removes any barrier to take up.

However, despite finding and engaging 'hard to reach' householders, many remained in fuel poverty even after the interventions. Moreover, with the reduction in average energy usage among recipients ranging from 18% to 24%, the impact falls short of achieving the Scottish Government's target of reducing carbon emissions by 42% by 2020. This was due to the limited range of measures available under the schemes.

Recommendations

Public policy and funding appears to be developing in a manner which supports area-based approaches and expands the range of measures available. However, it is demonstrated here that the extent of this is, as yet, insufficient in the context of fuel poverty and carbon emission targets. The changes required therefore are more a matter of degree than direction.

The report recommends an expansion in the existing support for this model through:

- The further integration of government and energy company efforts to help achieve both fuel poverty and carbon saving targets,
- A redefinition of the 'Priority Group' within regulations surrounding energy companies' schemes to include those found to be fuel poor,
- A more extensive range of measures for 'hard to treat' properties, and the provision of low and zero-carbon technologies.

While there is some support from government and energy suppliers already for an area-based approach there is as yet little available free of charge on a non-means-tested basis. It is demonstrated here that a non-means-tested approach for socially driven schemes can, in certain circumstances, be a rational alternative to a means-tested approach. Furthermore, it is argued that in order to engage with 'hard to reach' groups who do not respond to general marketing campaigns, a non-means-tested approach is the only effective option available. It is only through this approach that maximum carbon savings can be delivered through ensuring all, including the 'able to pay', receive measures.

Therefore:

- To ensure all who should receive help actually do so, consideration should be given to extending a non-means-tested approach focussed primarily on deprived areas,
- Consideration of an expansion of this approach to less deprived areas is also required in order to ensure an increased response rate among the 'able to pay', and to maximise carbon savings.

The implementation of such recommendations would go some way to ensuring the potential environmental and social benefits which flow from an area-based, non-means-tested approach are more fully realised.

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1. Introduction

There is a wide variety of approaches to tackling both fuel poverty and carbon emissions from housing. These approaches have spawned an even wider variety of projects and funding schemes from the Scottish and UK governments, local authorities, energy companies, charities and others.

In 2007 the Energy Agency, an independent charity based in South West Scotland, managed an energy efficiency project funded by Scottish and Southern Energy (SSE) based within three small communities around Hadyard Hill in South Ayrshire. The areas were chosen because of their proximity to SSE's newly built windfarm on Hadyard Hill and the project was fully funded by SSE. The 'Hadyard Hill model', as the approach shall be described in this report, is an area-based, non-means-tested model focussed on improving home energy efficiency through the provision of free measures. Help was also available to access funding for micro-renewables, benefit checks and carbon footprint information. The insulation measures were offered to all households in the area irrespective of income, age or any other eligibility criteria. The only requirements were that the property was located in the project target area and was suitable to receive the measures available. The approach was developed in conjunction with South Ayrshire Council, who also funded the project manager's post to oversee this work, in order to increase up take levels and promote community engagement.

The Hadyard Hill project won an Ashden Award in 2008 for its innovative approach and was replicated by the Energy Agency in both Girvan in Ayrshire and Fintry in Stirlingshire, during 2008 and 2009. Again these projects were mainly funded by SSE along with support from the local authority, housing associations and, in Fintry, through the Scottish Government's Climate Challenge Fund.

2. Purpose of the Report

This report assesses the effectiveness of an area-based, non-means-tested approach to tackling fuel poverty and reducing the environmental impact of housing in Scotland. This Hadyard Hill model differs from traditional approaches aimed at eradicating fuel poverty where householders are assessed and specific factors, such as receipt of certain benefits or age of occupants, are set as eligibility criteria. In many socially driven schemes, such as the Scottish Government's recently ended Central Heating Programme and Warm Deal, or the new Energy Assistance Packages which replaced them, those who meet the set eligibility criteria receive the available measures free of charge. The rationale for this is to ensure funds raised through taxation are targeted at those most in need and spent in the most cost-effective way. Similarly, the more environmentally focussed obligations on energy companies, under the Carbon Emissions Reduction Targets (CERT), require companies to achieve at least 40% of their targets from efforts focussed on Priority Groups[1]. This requirement is designed to ensure that low-income households are not excluded from the benefits of the funds raised from all consumers.

Thus schemes which move away from eligibility tests based on proxies of need, such as receipt of benefits and/or age, and which instead focus on specific geographic areas run the risk of being, or being perceived to be, regressive in nature. This report examines such concerns.

1. The Priority Groups cover those on specified benefits and those over 70 years of age.

There are two main drivers behind home insulation schemes. Historically the main driver has been the need to lift households out of fuel poverty[1], a need, which it could be argued, is increasingly important in the current financial context and with fuel prices expected to rise. More recently the need to cut carbon dioxide emissions has increasingly become a policy priority behind such schemes.

This report therefore assesses the social and environmental impacts and cost effectiveness of an area-based, eligibility-free approach through an analysis of the three schemes listed above.

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3. Context

An area-based approach needs to be understood within the context both of the targets which shape such efforts, and of other current and developing schemes.

Targets

There are two main legislative targets driving efforts to improve energy efficiency. These are well covered in existing literature and need only be outlined here[2].

The first is the legislative requirement for the Scottish Government to end fuel poverty in Scotland 'as far as is reasonably practicable' by 2016[3]. Currently around 37% of households in Scotland are fuel poor, this has risen from just over 13% in 2002 mainly as a result of fuel price rises[4]. These price rises have wiped out the reduction in the overall numbers of fuel poor in the preceding years. The impact of energy prices on levels of fuel poverty underlines the need for even greater efforts to protect low-income households from rising fossil fuel prices through improvements in energy efficiency.

The second is the legislative target to reduce carbon dioxide emissions. The Scottish Government has recently adopted ambitious targets and is committed to reducing carbon emissions by 42% by 2020 over 1990 levels, and 80% by 2050. It has been demonstrated in a recent publication from WWF Scotland that a significant increase in investment is required to achieve the 80% target, along with a re-alignment of existing schemes, an expansion of available measures, and a move to more area-based retrofitting projects[5].

1. A household is said to be fuel poor when it would require to spend 10% or more of income on its energy costs while maintaining an adequately warm home.
2. See for example WWF, Carbon Countdown for Homes: how to make Scotland's homes low carbon
3. Housing (Scotland) Act 2001, s.88
4. Based on figures from the Scottish House Conditions Survey Team, showing a 1% rise in fuel price increases the incidence of fuel poverty by 8,000, Energy Action Scotland estimate there were 850,000 households in fuel poverty in 2009. Also see Scottish House Conditions Survey Key Findings 2007 table 19
5. WWF op cit.

Current Schemes

There is a wide range of funding streams currently available to householders in Scotland, the main ones being the Scottish Government's Energy Assistance Packages (EAP)[1] and the energy companies' Carbon Emissions Reduction Target (CERT) schemes[2].

The EAP uses eligibility criteria to determine what level of support to provide and is not area based. For the current financial year £50m has been made available for EAPs, this is set to reduce to £46m next year[3].

CERT schemes also tend to offer different levels of support depending upon eligibility criteria. No accurate figures currently exist but it is expected that around £100m will be spent annually in Scotland as a result of CERT[4].

Since the development of the Hadyard Hill model, there are now more schemes focussed on rolling out area-based projects. The Scottish Government's Home Insulation Scheme (HIS)[5], which has £15m per annum for 2 years, seeks to target specific areas and to draw in all potential sources of funding into those areas. Part of the rationale behind HIS is to introduce economies of scale and maximise carbon savings per pound. It is hoped this will ensure energy companies are attracted to such schemes to deliver their obligations cost-effectively under CERT[6].

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The GB-wide Community Energy Savings Programme (CESP) is a pilot scheme also focussed on an area-based approach in areas of concentrated multiple deprivation and looks to combine the efforts of energy companies, local authorities and local community groups[7]. This is expected to provide £350m between 2009 and 2012 across the UK.

There is further support from the Scottish Government targeted at domestic-scale renewable technology through the Energy Saving Trust's Homes Renewables scheme[8] and, at a community level, through the Community and Renewable Energy Scheme (CARES)[9]. This latter scheme is also area based and aimed at encouraging and facilitating local ownership of community-scale renewable generating capacity. There is also a recently announced loan fund from the Scottish Government which looks to facilitate householder investment in insulation, boiler replacement and small scale renewables[10].

1. See Scottish Government http://www.scotland.gov.uk/Topics/Built-Environment/Housing/access/FP/eap
2. See DECC http://www.decc.gov.uk/en/content/cms/consultations/open/cert/cert.aspx
3. Scottish Government, Scottish Draft Budget 2010 – 2011, tbl. 3.05
4. Scottish Government, Securing our share: A CERT Strategy for Scotland (2009)
5. See Scottish Government http://www.scotland.gov.uk/Topics/Built-Environment/Housing/quality/his
6. Scottish Government, Securing our share op cit.
7. See DECC http://www.decc.gov.uk/en/content/cms/consultations/open/cesp/cesp.aspx
8. Energy Saving Trust http://www.energysavingtrust.org.uk/homerenewables
9. Community Energy Scotland http://www.communityenergyscotland.org.uk/cares.asp
10. Energy Saving Trust http://www.energysavingtrust.org.uk/scotland/Scotland-Welcome-page/At-Home/Grants-and-offers/Energy-Saving-Scotland-home-loans

Table 1 number of properties, surveys and installations

	Fintry (%)	Girvan (%)	Hadyard Hill (%)	Combined total (%)
No. of properties	333	3006	828	4167
No. receiving advice/info	333(100)	3006(100)	791(96)	4130(99)
No. survey and reports	260(78)	2162(72)	748(90)	3170(76)
No. receiving measures as % of target group	152(46)	963(32)	469(57)	1584(38)
No. receiving measures as % of those surveyed	152 (58)	963(45)	469(63)	1584(50)

4. A summary of the projects

The three projects targeted all housing in the relevant community council areas in Hadyard Hill, Fintry and Girvan (table 1). Additionally community buildings were targeted in Fintry and small business premises in Hadyard Hill[1].

Housing

Neither Fintry nor Hadyard Hill has access to mains gas. Both these areas contained a high proportion of older, exposed properties with poor insulation. In Girvan there was access to mains gas and the housing was less dispersed than in the other areas, however, many properties were exposed and insulation was generally poor.

Marketing and community engagement

Substantial effort went into marketing the projects beforehand. Leaflets, letters to all householders and local press coverage were all used to good effect, while existing community groups were identified and engaged with throughout the project.

Take up

All households were offered surveys and, of the 4,100 properties in the three areas, 76% accepted and received them[2]. If the property was identified as suitable, relevant measures were offered free of charge. Over 1,500 properties received measures in what amounted to almost 40% of all properties in the areas (table 1).

1. For detailed reports on each of the projects http://www.energyagency.org.uk/page.php?id=386
2. These were based upon a basic NHER level 0 with additional information gathered.

Funding
The majority of the funding for the surveying and insulation measures was provided by SSE with additional support from the local authorities. The total costs of the schemes amounted to almost £771,000. This was largely provided by SSE through an 'Energy Efficiency Fund' established as a result of the Hadyard Hill Windfarm, and through CERT funding. South Ayrshire Council also provided funds for a member of staff to project manage these schemes, and in the case of Fintry the Scottish Government Climate Challenge Fund was utilised. A mix of funding sources is fundamental if a non-means-tested, area-based approach is to be rolled out, this allows for up-front marketing and engagement costs, different insulation measures and all types of tenures to be covered.

People
Both Hadyard Hill and Girvan are relatively low-income areas with almost 60% in Hadyard Hill reporting annual household incomes of less than £15,000, while in Girvan over 50% were in this income bracket. In Fintry this figure was 25%. Of those providing information 10% in Fintry reported claiming a benefit, with 24% and 32% respectively in Girvan and Hadyard Hill.

Delivery
The schemes were managed and developed by the Energy Agency on behalf of SSE, with support from local community groups, along with Stirling and South Ayrshire Councils. South Ayrshire Council played a central role in the development of these schemes and, through the provision of funding for the project manager, their implementation.

Surveys were carried out by Clyde Insulation Contracts Ltd and Miller Pattison Ltd. Measures were installed in private housing by Clyde Insulation Contracts Ltd. and, in the majority of council housing by Miller Pattison Ltd.

The project in Hadyard Hill ran from March to October 2007, from February 2008 to February 2009 in Girvan, and from August 2008 to January 2009 in Fintry.

Measures
The main measures on offer were cavity wall and loft insulation. Also available were a variety of offers across the different schemes, these included, draught proofing, water tank insulation, real-time display meters, and low-energy light bulbs. Much of this was beyond the range of measures usually provided under CERT and further demonstrates the benefits of securing a mixed range of funding sources.

Table 2 income brackets

Annual income	Fintry (%)	Girvan (%)	Hadyard Hill (%)
< £10000	15	32	34
£10000-£15000	10	21	24
£15000-£20,000	10	16	13
£20,000-£30,000	14	18	15
>£30,000	51	14	14

Note: may not add up to 100% due to effects of rounding

5. The impact of the schemes – an overview

5.1 Social Impact

Fuel bills and disposable income
The average reduction in fuel bills for recipients was between 12% and 21% giving savings of between around £180 and £600 per year (table 3). At a community level disposable annual income in Girvan increased by £230,000 while in Fintry and Hadyard Hill the figures were £91,000 and £84,000 respectively (table 4)

The differences in average fuel bills are due to a variety of factors such as significant price rises occurring between the projects, access to mains gas, and house types[1].

Savings from energy efficiency advice
Due to the energy efficiency advice and information given, additional savings will have been made through behavioural changes. It is difficult to measure the impact of such advice without more in-depth and repeat surveys, but based upon conservative estimates the additional savings presented in table 4 are reasonable [2].

It should be noted, that as savings from measures and from behavioural changes are based upon modelled fuel costs, the actual savings may differ. Also a portion of any savings may be taken up as 'comfort' by householders who were perhaps not heating their homes sufficiently. Further research would therefore be required to assess more accurately the actual community savings realised. However, the figures presented here provide a useful indicative measure of the schemes' impacts on disposable income.

The local economy
It is clear that increased disposable incomes mean increased local spending power, and that this will in turn contribute to stimulating local economies. Table 4 shows an annual increase in community disposable income of £162,000 for Fintry, £561,000 for Girvan and £176,000 for Hadyard Hill. Loft and cavity wall insulation measures are expected to last for 40 years and the savings should likewise continue for this period[3].

1. 84% of households in Girvan had access to mains gas, while both Fintry and Hadyard Hill were entirely off gas. There is also a higher proportion of cheaper solid-fuel heating systems in Hadyard Hill than in Fintry; while housing in Fintry tends to be larger with greater requirements for space heating.
2. Behavioural savings based upon the Energy Agency's use of Energy Saving Trust estimates of 20% savings from those receiving the type of advice provided. 80% of respondents to the questionnaire in Hadyard Hill stated their intent to follow this advice; this 80% has been applied across the other two communities. It has however been assumed that many would have been carrying out some of the energy savings measures already, so savings were reduced to 10% of average fuel bills of those receiving advice, for the sake of calculation.
3. Ofgem, Carbon Emissions Reduction Target (CERT) 2008-2011 Technical Guidance Manual.

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Table 3 average fuel bills among recipients - £s per annum

	Before	After	% Reduction
Fintry	£2880	£2280	£600(21%)
Girvan	£1500	£1260	£240(16%)
Hadyard Hill	£1450	£1270	£180(12%)

Table 4 total annual savings in community from measures and behaviour

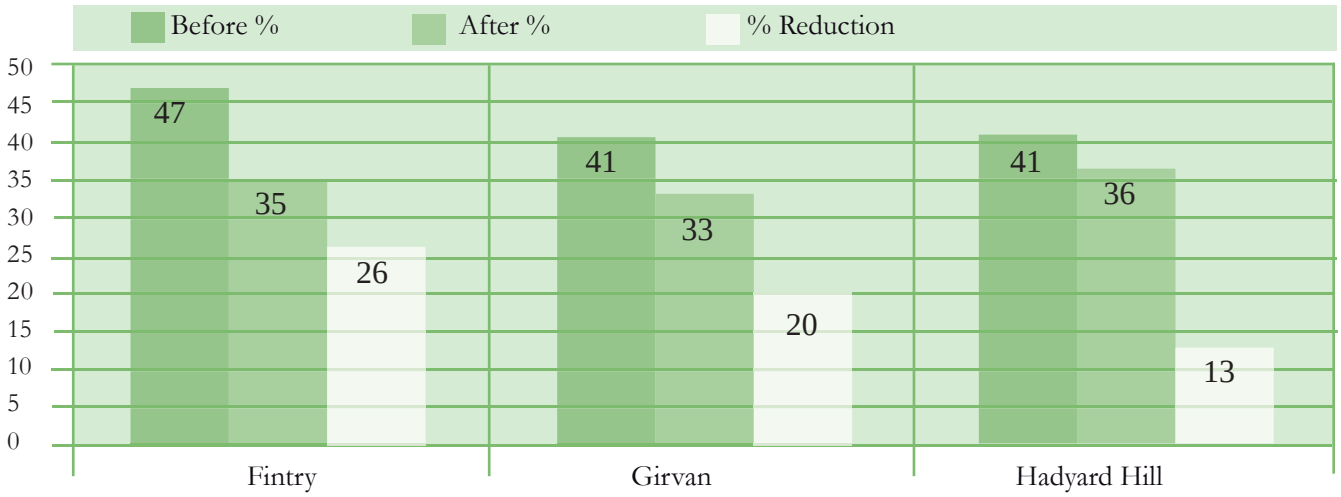
	Total savings - measures	Total savings - behaviour	Combined
Fintry	£91,000	£71,000	£162,000
Girvan	£230,000	£331,000	£561,000
Hadyard Hill	£84,000	£92,000	£176,000

Note: see footnote 2 page 12 for explanation of behavioural savings calculation.

What proportion is saved rather than spent, and how much of what is spent is spent locally, will be shaped by a variety of factors. However, research suggests that low-income households are unlikely to save much of any increase in disposable income. For example, a study in Glasgow suggests that a 'high majority' of additional funds made available to low-income households will be spent and spent locally[1]. It also points out that this leads to an indirect and positive impact on local employment, helping to maintain and/or create local jobs.

There is also a clear potential for such localised projects to directly stimulate the local labour market. In Hadyard Hill for example 2 local surveyors were trained and employed for the project along with a project manager. This effect is more obvious in larger schemes. In the similar and ongoing Kirklees project in Huddersfield where, as of March 2009, 25,000 properties had received measures, and 600 installations were going in every week, a number of jobs have been created as a direct result. Kirklees Energy Services, the local energy advice centre, has

Fig 1 Incidence of fuel poverty (%)



1. Fraser of Allander Institute The Effect of Citizens Advice Bureaux on the Glasgow economy, (March 2005)

taken on an additional 26 full-time equivalent staff, while Miller Patterson, the installer, has taken on 85 staff and built a new training centre.

Fuel poverty

Prior to the insulation measures 47% of the recipients were fuel poor in Fintry and 41% in the other two areas[1]. After the schemes the incidence of fuel poverty had reduced by between 13% and 26% (Fig 1). As is discussed below, many of those who received support would not have done so under an eligibility-based scheme as they were not in receipt of a 'passport' benefit.

While such a reduction is welcome, it should be noted that this means a significant majority of those identified as fuel poor remained so even after the programme was implemented. Rather than a criticism of the design or delivery of the schemes however, this fact should be taken as evidence that the measures on offer at the time were inadequate to reach the target of ending fuel poverty.

Policy Recommendation: once fuel poor households are identified and engaged, all reasonably practicable measures should be provided. This should include those measures recommended in B. Boardman's recent publication, Home Truths, such as insulation for solid wall properties, micro-renewables and heat pumps. It has been recommended that to 'future proof' homes from fluctuating fossil fuel prices minimum energy efficiency standards should be set at NHER 8 [2]

1. Fuel poverty here was based upon modelled fuel costs required to maintain a standard heating regime, income was taken as the mid-point of the income range the household reported, calculations were based on analysis of the households who gave sufficient income and energy usage data.
2. Boardman, B. Home Truths (University of Oxford, 2007), Chpt 5&6. & WWF ibid. Chpt. 2

The incidence of extreme weather events will increase as climate change advances

Cost effectiveness

In Fintry the annual savings from the measures alone were the equivalent of the initial investment, meaning that the project pay-back period was one year. An alternative way of describing this is that for every £1 spent £1 was saved. If savings from behaviour are included the pay-back period reduces to 6 months, in other words to generate £1 saving it cost £0.56.

In Girvan the initial costs outstripped the savings from measures so the cost to produce £1 of savings was £1.74, while in Hadyard Hill the figure was £3.33 (table 5)[1].

Comparisons with Warm Deal

In terms of analysing the cost effectiveness of this approach, relative to non-area based approaches, it is difficult to get a direct comparator. However, the Warm Deal provides a useful context.

The Warm Deal offered similar measures as those in the Hadyard Hill model, free to recipients, but was means tested and non-area based. The difference in results between the Hadyard Hill model and the Warm Deal are therefore likely to be a result of taking a means-tested and a non-area based approach. (Fig 2)

Table 5 cost of savings (£s)

	Fintry (£)	Girvan (£)	Hadyard Hill (£)
Overall cost of scheme	91,000	400,000	280,000
Total savings - measures	91,000	230,000	84,000
Costs/savings -measures	1	1.74	3.33
Total savings - including behaviour change (ft 2 pg12)	162,000	561,000	176,000
Cost/savings – including behaviour change	0.56	0.71	1.59

Note: costs include insulation, surveying, marketing, management etc

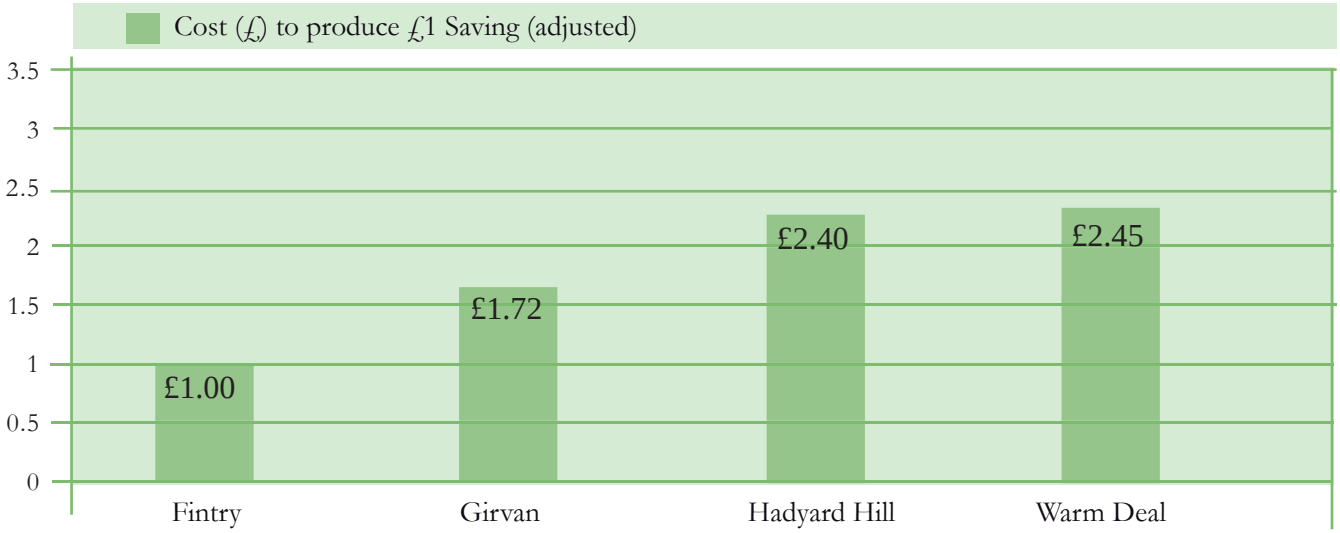
1. The differentials in savings are due partly to the differences in average fuel bills described above (table 3) and partly due to the fact that a high proportion of lofts in Hadyard Hill had existing insulation to a depth of 150mm. The topping up of such lofts delivers relatively small savings.

In 2005/06 the average spend per recipient of the Warm Deal was £380 resulting in an average saving of £155[1]. This gives a cost of £2.45 per £1 saved. The cost to save £1 from measures in the Energy Agency schemes ranged from £1 to £2.40, and therefore compare favourably with the Warm Deal's approach (Fig 2). The difference in the results for Hadyard Hill in figure 2 and table 5 is due to an adjustment made for price movement (+40% between October 2007 and October 2008). Table 5 is based on energy prices at the time of the project (2007 for Hadyard Hill). Figure 2 (and figure 3) uses the adjusted figure to enable comparison with the other projects based on 2008 prices.

The Warm Deal figure is likewise adjusted. This adjusted figure is not used in table 5 as this would falsely inflate the increase in disposable income.

However, as Warm Deal spending was focused on fuel poor households, perhaps a more useful comparison for socially driven schemes would be to assess the impact on fuel poverty of the Hadyard Hill model. Fig 3 below attributes the entire overall cost of the Energy Agency schemes onto those households found to be fuel poor, and relates this to the savings made only by these households. So if the entire £91,000 spent in Fintry is assumed to have been spent

Fig 2



Note: total costs of scheme divided by 100% of calculated fuel bill savings

1. Communities Scotland Central Heating and Warm Deal annual report, 2005/06 reports £111 saving, however to allow for price increases to 2008, a 40% increase in the saving has been applied based upon the ONS Family Expenditure Survey 2008 tbl 4.1 and Ofgem Quarterly Wholesale/Retail Price Report May 2009

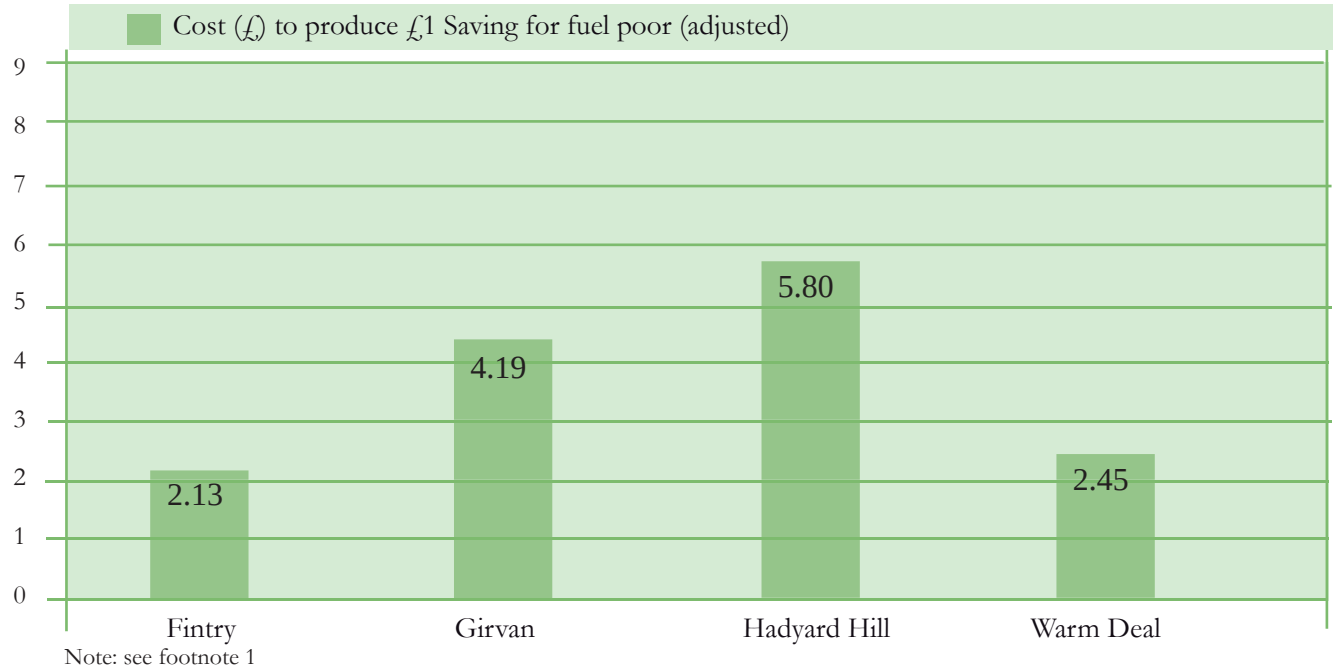
on only the 47% found to be fuel poor, then the cost to save £1 for fuel poor groups is £2.13[1]. This is remarkable in as much that even if all the costs are loaded onto the fuel poor, it still worked out more cost effective than the Warm Deal to serve those fuel poor households; in addition around the same amount again of non-fuel-poor households received measures and saved carbon for no additional costs. Therefore, in some circumstances it can be more cost effective for fuel poverty driven schemes to take an area-based, non-means-tested approach[2]. While the other two projects worked out more costly than the Warm Deal if all costs are loaded onto fuel poor households, it should be noted that the wider financial and carbon savings in non-fuel-poor households can be significant (see below).

It should also be noted that many fuel-poor households normally considered 'hard to reach' were identified and engaged as a result of the approach taken in the Hadyard Hill model. Therefore, even where the cost compares less favourably with other approaches, this model may still be worth considering in order to reach those fuel poor households who are difficult, and therefore expensive, to engage.

If, as is argued below, environmentally and socially focussed schemes are integrated in such projects, the rationale for the area-based, eligibility-free approach is clearly increased as efficiencies are realised in upfront and other operational costs, and the various funding streams allocated to relevant household types.

Policy Recommendation: policy should recognise that in some circumstances it can be more cost effective for fuel poverty driven schemes to take an area-based approach with no eligibility criteria. In addition policy should recognise that financial and carbon savings can be delivered cost effectively to non-fuel poor households in these areas.

Fig 3



Note: see footnote 1

1. Based upon the total costs/(savings x % incidence of fuel poverty) giving the relation between total costs and the savings for the fuel poor.
2. It should also be noted however that the Warm Deal used passport benefits as a proxy to identify fuel poor households, rather than an assessment of fuel poverty per se, and was delivered to both fuel poor and non-fuel-poor households. Therefore, the cost to save for fuel poor households would be higher than that calculated above. This makes the Hadyard Hill model even more cost effective in comparison.

5.2 Environmental impacts

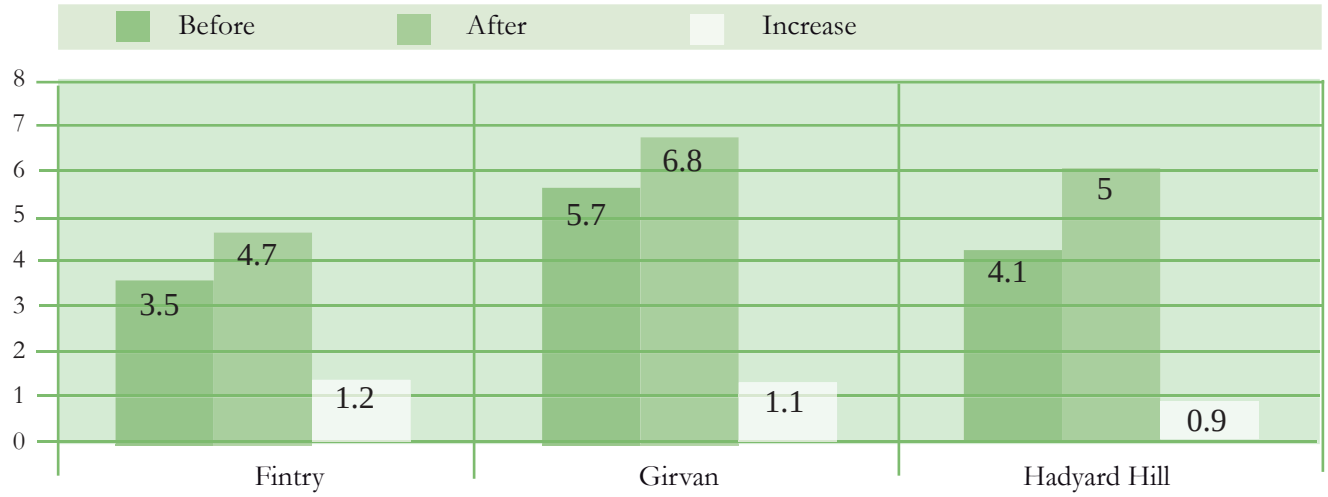
Energy Savings
The following tables show the savings made by the installation of measures and do not account for any behavioural changes. Table 6 shows that recipients in Fintry saved most in terms of the modelled average energy use per household, cutting consumption by around one quarter while NHER ratings increased by around 1 point in each project (fig. 4).

Among recipients energy usage was reduced by between 18% and 24%. Spreading the energy saving across the entire initial target groups gives reductions of up to almost 12% across the community in Fintry, almost 10% in Hadyard Hill and 8% in Girvan. In terms of carbon dioxide the average reduction in emission among recipients across the three areas was around 19%. In the context of the Scottish Government's emissions reduction target of 42% by 2020 and 80% by 2050 these schemes, while playing a valuable role, are clearly insufficient to deliver their share of such targets. Again, they would have had more impact if the range of measures available to households were expanded to provide assistance to solid wall and flatted properties, and supported microgeneration technologies. This would have deepened the impact upon those who received measures and expanded the numbers who received them.

The potential for expanding the range of available measures is explored in detail elsewhere[1]. The recent moves towards such an expansion, through the EAP and CERT for example, are beneficial in this respect. However, the scale of this expansion is as yet too limited to help achieve government targets.

Policy Recommendation: to ensure the domestic sector reaches the carbon reduction targets required, measures to deal with solid-wall properties along with renewable and low-carbon heat technologies need to be rolled out on a far greater scale. In order to maximise the impact of ongoing schemes it is vital that such an expansion of measures is rolled out rapidly to avoid the need to revisit properties already treated with inadequate measures.

Fig 4. Average energy rating among households receiving measures - NHER



1. See for example Boardman, B. op cit. Chpt. 6 & WWF op cit. Chpt. 2.

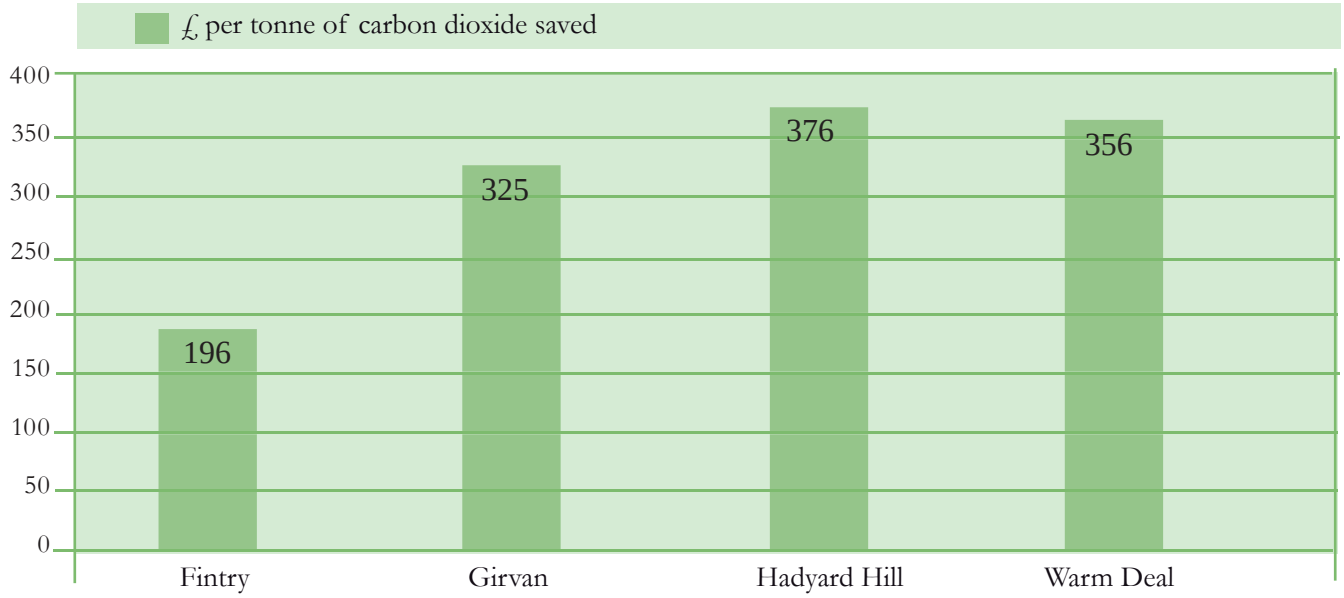
Table 6 average energy savings MWhs per annum in households receiving measures

	Before	After	Saving MWh(%)
Fintry	42	32	10(24%)
Girvan	27	21	6(22%)
Hadyard Hill	34	28	6(18%)

Cost effectiveness compared to Warm Deal

Again the Warm Deal is a useful comparator to asses the relative costs of carbon savings. Taking an average of three years of the Warm Deal gives a cost per tonne of carbon dioxide saved at just over £356[1]. The cost per tonne of carbon dioxide saved in both Girvan and Fintry through the installation of measures was less at £325 and £196 respectively (fig. 5) It would appear therefore that there are benefits for the cost of carbon reduction in an area-based, non-means-tested approach.

Fig 5



1. This average covers the years 2002/03, 2003/04, and the latest figure available 2005/06. The average was taken as the costs for saving a tonne of carbon dioxide in 2005-06 were anomalously high, being around double that of the other years, at £694. The total expected carbon dioxide saved over these years is 62,600 tonnes for a spend of £22.3m see relevant Central Heating Programme & Warm Deal, Annual Reports.

Table 7 carbon dioxide savings per annum

	Fintry	Girvan	Hadyard Hill
Tonnes of carbon dioxide saved - total	467t	1227t	744t
Tonnes of carbon dioxide saved – per household	3.1t	1.3t	1.6t

6. An analysis of the approach

Based upon the figures presented above it is clear that area-based schemes, where measures are delivered without means testing, have the potential to be highly cost effective, both in terms of benefits to low-income households and in terms of carbon savings, when compared to means tested, non-area based schemes such as Warm Deal.

Perhaps the most remarkable result from the Hadyard Hill model is the percentage of householders accepting the measures. Between 72% - 90% of the target groups (i.e. all local households) responded positively, accepting surveys and receiving reports. The Energy Agency report that other approaches, such as ones based on eligibility criteria, or requiring a financial contribution by the householder, and which are less geographically focussed, would typically achieve around a 10% response rate.

The effect of such high response rates is pronounced. Firstly, the 'cost per lead' is significantly reduced as the response rate increases. Secondly, the geographical concentration of leads greatly enhances the operational efficiencies of installing the measures. Together these contribute to a significantly lower cost per tonne of carbon dioxide saved.

Additionally, the intensity of awareness required to elicit such responses makes it highly likely these campaigns are reaching householders who are seemingly immune to other marketing initiatives.

There are clearly a variety of factors which contribute to such take-up rates, discussed below are the three main ones which stand out here:

- The area-based nature of the schemes allows for intensive marketing and community engagement which helps increase awareness and trust locally,
- There is no eligibility test. This aids in increasing participation through removing the barriers normally associated with means testing,
- All measures were free. This removes any financial barriers to participation both from those who are able to afford a contribution, and from those who are not.

The success of the Hadyard Hill model is based on a combination of these three factors and suggests an expansion of this model is justified.

6.1 An area-based approach

Awareness and trust

This approach brings with it the possibility of intense marketing. The fact that resources are focussed in one area ensures greater coverage and increased awareness.

All of the schemes assessed here utilised a wide range of methods for engaging with the targeted communities. Posters were widely distributed in public places, all households in the area received a letter explaining the scheme and the processes involved, thermal images were widely used to demonstrate to householders the need for insulation measures, public meetings were arranged in community spaces, energy lessons were provided at all local schools, and the local press was utilised, both to launch the schemes, and keep the community up-to-date on progress.

In tandem with efforts to raise awareness the Energy Agency worked to engage with local groups in order to help establish a level of trust in the projects. In the Hadyard Hill scheme, which covered three communities, a steering group comprising of the community councils and the local authority was established to assist the Energy Agency; in Fintry the already established and active Fintry Development Trust helped manage the project; while in Girvan the Energy Agency remained engaged with the community council throughout the project. This level of engagement and local endorsement established a greater feeling of trust and ownership than is ever observed in more dispersed schemes.

The Kirklees project, which also won an Ashden Award for its approach, similarly utilised intensive local marketing and linked into already established networks of groups and individuals, and described this as a major factor in the success of the scheme. This scheme is ongoing but looks like delivering significant success rates. By May 2009 70% of 115,000 households visited had been 'assessed', 55% referred for a full insulation survey, and 30,000 had received these.

The initial demand on resources made by the intensive phase of community engagement and marketing may be higher in this approach, however, with over 70% in all areas accepting surveys and reports, compared with a 10% response rate to other approaches made by the Energy Agency, the additional up front efforts seem to be justifiable. Moreover, as the projects called door to door and left energy efficiency tips and advice in almost 100% of the target groups (and received responses to questionnaires stating 80% would utilise this information), the carbon savings achieved by this approach from behavioural changes, as outlined above, may be significant.

Projects which have no geographic focus would clearly be unable to get as deep into a community and to gain such a level of awareness and trust.

The Scottish Government's HIS is intended to facilitate such an approach and bear some of the upfront costs in order to engage local communities, bring together funds from local authorities and energy companies, and exploit economies of scale. CESP is designed in a similar manner. While these will prove beneficial in principle, the scale of the funding available for these programmes is as yet too limited to make a major inroad into either the carbon or fuel poverty targets. It is hoped, if shown to be effective in increasing uptake and drawing in funds, that the scale of these schemes will be increased in the coming years.

Funding

Another benefit of this geographic focus is that it allows for managing agents such as the Energy

Agency to identify and coordinate funding partners. This can be seen through the Energy Agency's coordination of funds from CERT, the local authority, housing associations, renewable grants (and household contribution to these) and community benefit funds. The more dispersed a project is the more difficult it would become to effectively identify and coordinate such funding streams.

Carbon, time and fuel costs.
Focussing activity on a geographical area generates real financial efficiencies. Transport costs are reduced, less time is spent in travel, and the carbon cost of delivering the project is minimised. In Kirklees the installer estimated the productivity increase due to reduction in travel time resulted in 50% more installations per day[1]. In rural areas this geographic focus is even more important as the spread of work can otherwise mean long journey times.

Legacy
The involvement of local community groups allows for the possibility of raising their awareness of energy issues generally. It also adds to their experience and confidence, building local capacity for engagement and development. Examples of strengthening links between householders emerged where skills were exchanged with residents assisting each other with disability claim forms and minor home improvements. Also, as communities are strengthened, there are increasing possibilities for the development of community ownership of generation capacity through schemes such as CARES. This community level generation can lead to greater efficiencies in electricity transmission and reduce losses and costs associated with serving dispersed communities.

Additionally, the information gathered on the housing stock in the area may prove to be of use in the future as more measures become available for the properties unable to benefit from cavity and loft insulation.

A range of potential benefits therefore flow from taking an area-based approach. Increased local awareness and trust, the effective coordination of funding, increased cost effectiveness in delivery, and long-term impacts on the community are but some of the most apparent. Along with the concentration of increased disposable income and the impacts of this on the local economy covered above, these provide a strong case in favour of this approach.

Policy Recommendation: All area-based projects, especially in low-income areas, should seek to facilitate the community's engagement with schemes such as CARES.

1. 2009 UK Ashden Awards case study – Kirklees, pg 3. http://www.ashdenawards.org/files/reports/Kirklees%20Council%20case%20study%202009.pdf

6.2 Non-means tested

The traditional method for ensuring spending is focussed on low-income groups has been to use means testing. In the field of energy efficiency this has tended to be done through identifying a means-tested benefit, such as Income Support, Pension Credit or Working Tax Credit, and using this as a 'passport' to access the schemes in question. This is how the Priority Group is identified under CERT and how EAP operates. The use of such eligibility criteria is used to assess whether, and to what level, assistance will be provided.

However, both the use of means testing, and reliance upon passport benefits to identify intended recipients, can exclude many of those who are fuel poor. This impacts upon the ability of means-tested schemes to effectively target low-income groups. There are a number of reasons why this is the case.

Firstly, there is the issue of eligible households not claiming the 'passport' benefits to which they are entitled. This is a significant factor with as many as 20% of those eligible for Income Support, 40% for Pension Credit, and 45% for Working Tax Credits failing to claim[1].

Secondly, there are those who are fuel poor who do not qualify for a passport benefit. Schemes based upon passport benefits can offer little to these families.

The impact of these two factors can be seen in the data gathered in the three projects. In Fintry 69% of those who were found to be in fuel poverty were neither claiming a relevant benefit nor were they over 70, meaning they would be excluded from schemes based upon traditional eligibility criteria. In Girvan and Hadyard Hill these figures were 48% and 21% respectively.

Additionally, many people do not want to disclose their income because of a concern about how any information will be used, alongside this are feelings of stigma attached to poverty and 'dependency' which cause people to withhold relevant information[2]. Indeed in the three projects covered here almost 40% in Hadyard Hill gave no income information, while in Girvan and Fintry 19% and 24% respectively withheld this information.

There will therefore be a significant number of households living in fuel poverty but who will be excluded from grant funding, either because they withhold information from the project, because they have failed to claim the passport benefits to which they are entitled, or because they are not entitled to benefits as they live at the margins of eligibility criteria but are, nonetheless, fuel poor.

The aim of public policy is to identify and help those most in need and ensure fairness in the drive to reduce carbon while tackling fuel poverty. The aim is not to aid only those on relevant benefits.

It is not suggested here that means-tested approaches should be ended and completely replaced by area-based schemes. However, there can be little doubt that in some locations non-means-tested, area-based schemes would be a better use of resources, and reach more people, a proportion of whom, who despite being genuinely fuel poor, would never benefit under a means-tested model. Beyond this it is clear that such an approach is a cost-effective method for reducing carbon across all households.

1. DWP, Income Related Benefits Estimates of Take-Up in 2006-07: HMRC Child Tax Credit and Working Tax Credit Take-up rates 2006-07
2. The reasons for non-take-up most frequently cited as important are stigma and ignorance. See, for example Pudney, S et al The Welfare Cost of Means-testing (University of Leicester: 2002)

Policy Recommendation: to ensure all fuel poor households access schemes, consideration should be given to extending a non-means-tested area-based approach with deprived areas being prioritised. Such projects should be supported through the integration of Government and energy company efforts to help achieve both fuel poverty, and carbon saving targets.

The inclusion of those found to be fuel poor in the CERT 'Priority Group' would help incentivise energy companies to engage with such an approach. It would also help to address the concerns raised in Ofgem's 2008/09 report on CERT regarding the tendency of energy companies to focus Priority Group efforts mainly on the over 70's, rather than those on low incomes[1].

Policy Recommendation: a mechanism should be developed to allow for the inclusion of households found to be fuel poor in the CERT Priority Groups.

Linking fuel poverty and carbon reduction schemes would allow for the benefits of a non-means-tested, area-based approach to be delivered more widely while ensuring the targets for both can be effectively achieved. The approach of HIS focussing on relevant areas and seeking to draw in CERT funding is rational in this context. Consideration should also be given to utilising current and future fuel poverty spending programmes more fully to help deliver this approach. Integrating efforts and funding through CESP will also prove beneficial. Coordinating all such funding streams can only increase their efficiencies and ensure maximum progress towards targets.

6.3 Free of charge

All of the schemes delivered free measures. This undoubtedly increases take up both in low-income and other households and clearly played a significant role in ensuring that between 44% and 63% of the households surveyed actually received measures. If the range of measures was expanded as is suggested above, this take-up rate would increase accordingly.

1. Ofgem, A review of the first year of the Carbon Emissions Reduction Target (2009).

7. Conclusions

The area-based nature of these schemes brought significant benefits in terms of take up and the cost-effective delivery of social and environmental impacts.

The take-up rate was due largely to a local marketing and community engagement strategy effectively delivered by the managing agent. The involvement of local community groups, schools, press, politicians and councils all played a central role in increasing trust and awareness of the project. This intensity is only possible in area-based schemes where engagement and marketing activities are planned and managed effectively.

The cost effectiveness of the schemes was due to a combination of factors. The geographical concentration of the work delivered operational efficiencies in both surveying and installation; the removal of means testing removed associated administration costs and increased the numbers receiving measures; while the take-up rate itself reduced overall cost per lead.

The social impact of lower fuel bills was magnified by the concentration of efforts in geographic areas. A significant economic stimulus can be delivered to economically fragile areas using this approach. The intensity of this approach, and the lack of means testing, meant that those fuel-poor households who are normally thought of as 'hidden' or 'hard to reach', were engaged with and supported. The removal of means testing is therefore justifiable in areas where a combination of factors such as severe income deprivation, poor housing and lack of mains gas imply high incidences of fuel poverty.

For social, environmental and efficiency reasons there is merit in expanding support for such an approach, focussing first on Scotland's most deprived areas.

Greater coordination is required to make this approach more common. To that end the Scottish Government's Home Insulation Scheme should prove useful. If HIS is successful in drawing in funding from energy companies' schemes to local areas the benefits could be substantial. The use of local delivery agents such as local authorities could further enhance these schemes. An expansion of funds available for HIS is required and it would appear that, in certain circumstances at least, the integration of fuel poverty funding into HIS may prove cost effective and socially justifiable.

The UK Government's pilot of CESP (delivered by energy companies) is also designed to be delivered through engagement with local communities and integrated with other schemes. It is to be focussed on low-income areas with energy companies given flexibility to work with local partners to identify these. There is a wide range of measures available under the scheme. As such CESP fits well with the models under review here. However, the funding for CESP is currently limited, with only around 9,000 households expected to receive support in Scotland over the three years of the scheme, if delivered on a pro rata basis across GB. As such its impact will also be limited in the immediate future. It is therefore hoped that once this approach is more developed it will grow to become increasingly central in efforts to reduce carbon emissions and tackle fuel poverty. Additionally, it remains uncertain whether low-income rural areas will be able to access CESP. If not, then large areas of Scotland and the entirety of its rural poor will be excluded from this programme, while being expected to contribute to it through their fuel bills. This exclusion is

unacceptable and clarity and a fairer spread of programmes are required.

CERT regulations require that at least 40% of carbon savings come from the Priority Groups. In all of the schemes studied here over 40% of those receiving measures were found to be fuel poor. The inclusion of those found to be fuel poor in the Priority Groups would therefore provide greater incentives for energy companies to embrace this approach to deliver their targets. This would also help ensure that support to the Priority Groups is spread fairly across both the over 70s and the low-income categories.

The only major limitation with these schemes was the fact that even after interventions many households were left fuel poor, and carbon emission remained too high. This failure was driven not by the structure of the schemes but rather the limited range of physical measures available. Once successful efforts have been made to engage with householders it is vital that a much more expansive range of measures is made available. Again there is progress in this area. Under CERT, EAP and CESP for example more measures are becoming available. However, solid wall insulation, micro-renewable generation and other low and zero-carbon technologies must become mainstreamed in such schemes if targets are to be realised. For those unable to afford a contribution these must be free of charge. For those able to contribute the recently announced loan scheme from the Scottish Government will be useful in principle. However, the funding available is extremely limited and a considerable expansion is required if it is to have a significant impact.

Public policy and funding appears to be developing in a manner which supports area-based approaches and expands the range of measures available. The changes required therefore are more a matter of degree than direction. What is required is an expansion and integration of funding for such schemes and programmes such as EAP and CESP, along with greater support for more expensive measures.

However, in terms of a non-means tested approach, a change of direction is required. It has been demonstrated by the schemes under review that such an approach can, in certain circumstances, have a greater social impact and be more cost effective than eligibility-based models. In order to reach the 'hard to reach' this approach makes sense.

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