Reducing emissions through behavioural change: A report to enable the scoping and establishment of pilot programmes within Wales

A report for the Welsh Assembly Government

September 2010
# Contents

1. **Introduction**  
   1.1 Aims and objectives  
   1.2 Research approach  
   1.3 Changing behaviour  
   1.4 Developing interventions  
   1.5 Social marketing  
   1.6 Summary  

2. **Identifying behaviours**  
   2.1 How were the behaviours identified?  
   2.2 Identifying carbon impact  
   2.3 Shortlisting the behaviours  

3. **Analysing existing initiatives**  
   3.1 Existing initiatives  
   3.2 Behaviour change tools – how interventions are working to change behaviour  

4. **Recommendations**  
   4.1 Parameters  
   4.1 Recommendations for pilot interventions  
   4.2 Summary  

5. **References**  

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1 Introduction

"Climate change is the greatest threat facing humanity. Everyone in Wales has a contribution to make in tackling it – individuals, households, businesses, public services and community groups."

One Wales: One Planet

The vision of a more sustainable Welsh society is one where people understand what climate change means for them and how they can contribute, and is one where energy use has dropped due to vast improvements in energy efficiency and investment in low carbon technologies1. Putting this vision into reality will be a key part of reducing emissions in order to meet the Welsh Assembly Government’s target of achieving carbon reduction equivalent emissions reductions of three percent per annum by 2011 in areas of devolved competence.

Several key documents have been produced which outline the Welsh Assembly Government’s commitments to achieving the target of reducing carbon emissions. The consultation on the ‘Climate change strategy: Programme of action’ (2009) and the ‘One Wales: One Planet’ scheme include for example retrofitting schemes for houses across Wales; improving energy efficiency through the National Energy Efficiency and Savings Plan; providing support and advice for community energy schemes and providing people with information and support to reduce their carbon footprint and household energy bills through communications campaigns. In setting out these plans, the Welsh Assembly Government has noted its intention to play a full role in reducing carbon emissions, but also that radical changes in people’s behaviour are needed alongside this.

Two key areas have been highlighted by the Welsh Assembly Government (through work by the UK Climate Change Committee and the Energy Saving Trust) as having the greatest potential for carbon saving in Wales – domestic energy and transport use. Despite being an energy rich country and an overall exporter of energy2, residential energy use is responsible for approximately one quarter of the emissions covered by the target described above. Supporting activities which help households across Wales to reduce their energy consumption and improve energy efficiency will therefore be key to achieving this target.

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1 Welsh Assembly Government. (2009)
2 BERR 2005
1.1 Aims and objectives

Reflecting on the above it is clear that there is an opportunity for putting in place a series of programmes or interventions which reduce carbon emissions through changes in behaviour by Welsh residents. The overall aim of this research has been to bring together evidence which will enable the Welsh Assembly Government to pilot programmes, initiatives and interventions based on a social marketing approach which could set in train the behaviour changes required to achieve the target of carbon equivalent reductions in emissions of three percent by 2011 and the vision of Wales set out above. This report is specifically concerned with achieving reductions in emissions through improvements in domestic energy. Therefore the overall aim of the research has been the development of recommendations that will enable the Welsh Assembly Government to develop pilot behaviour change interventions which address domestic energy behaviours. Transport behaviours are covered in a sister piece of research being conducted by Sustrans.

1.2 Research approach

Taking into account the overall aim of this research, a compact desk-based approach was developed, by Brook Lyndhurst in partnership with the Energy Saving Trust, to scope possible pilot programmes that could help to reduce carbon emissions through improvements to domestic energy efficiency. The approach was designed around three phases:

- **Identification of behaviours** – Identifying the behaviours that contribute to reduced carbon emissions in the area of domestic energy use, and the carbon impacts associated with these behaviours given their potential for uptake across Wales, was the first step in the research. The final outcome of this phase was a shortlist of behaviours, developed in collaboration with the Welsh Assembly Government.

- **Analysing existing initiatives** – Following identification of behaviours, the second phase involved scoping possible approaches that encourage uptake of these behaviours.

- **Recommendations for pilot interventions** – Finally, to use the findings of phase two, along with the consultants’ judgement and experience, to make recommendations for the development of pilot interventions to be carried out in Wales.

The following sections of this chapter touch briefly on behaviour change theory and existing guidance on developing behaviour change interventions both to provide detail on the context in which this research is taking place, and to
provide insight into the previous research and experiences which have informed our recommendations.

1.3 Changing behaviour

There is a vast body of research concerned with the theory and principles of influencing behaviour. Whilst it was not the aim of this piece of work to comprehensively review the literature on pro-environmental behaviour (this has been effectively synthesised in previous studies\(^3\)), it is worth touching on and reminding ourselves of the key predictors, motivators and barriers to change that have been highlighted in these reviews.

The following framework outlines five key areas related to motivations and barriers. It is based on a number of theories of individual behaviour change and has informed and been informed by Brook Lyndhurst’s work on behaviour change\(^4\) as well as the existing body of research on the subject. These five key areas are:

- **Personal norms and identity** – particularly relevant aspects here are whether we (any individual) are aware of the consequences of our actions, whether that is of any interest to us, and whether we feel we should do something about it (i.e. our attitudes, beliefs and values). Having a sense of being able to carry out an action successfully, and that the action will bring about the expected outcome (‘agency’ or ‘self efficacy’) is also key in many theoretical models.

- **Social norms and identity** - refers to the influence on our thinking and behaviour from the wider social context, whether this is through *injunctive norms* (perception of what is right or legal), *descriptive norms* (how the majority of other people around us actually behave), *peer modelling* (copying what others do) and *social identity* (who we want to be and ‘tribes’ we want to belong to).

- **External conditions** - are generally those things beyond our control, whether this not having access to the right services or products, or are

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\(^4\) The framework was used in our recent evaluation of NESTA’s Big Green Challenge to help us make sense of what was observed and why it might have come about in the ten finalist communities.
whole system barriers that require significant transformation before action is possible. It is worth noting that these barriers can be perceptual as well as existing in reality.

- **Habits** – many behaviours are undertaken routinely and automatically. We generally don’t scrutinise these kinds of behaviours so there is little opportunity to change them. Habits need to be disrupted (e.g. at key moments of change in our lives, or through reminders or ‘emotional stir up’) or opened up for scrutiny (by presenting us with what we do).

- **Learning processes** – these similarly get us to scrutinise and deliberate our everyday actions and why we do them, for example, through communities of practice (the learning that comes from collectively striving towards a common goal – which can also relate to the development of social norms), experiential learning (learning by doing) and reflective practice (studying and questioning our own actions in order to improve performance).

The key areas defined above represent a somewhat narrowed down view of behaviour change theory – a field that is still under development and frequently contested. Work such as this research and the carrying out of pilot interventions remains important in order to test and verify the various theories of behaviour change.

### 1.4 Developing interventions

Bearing in mind these models and theories of influence on behaviour is important, however they should not be used as a rigid template for developing behaviour change interventions. Instead they should be used as tools and ‘aids to thinking’. Models cannot account for all the complexities of behaviour but they can help to identify the factors that influence behaviour and therefore the factors that may be addressed by an intervention.

The body of literature on best practice in developing behaviour change interventions is also one that is steadily increasing. For example, the Government Social Research’s recent guidance on using behaviour change models for development of policy puts forward a framework of nine principles as a starting point for developing behaviour change interventions. The nine principles are:

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5 Darnton, (2008)
6 Ibid.
Identify the audience groups and the target behaviours
Identify relevant behaviour models and influencing factors
Select the key influencing factors and design the strategy for the intervention around these
Identify effective intervention techniques which have worked in the past
Engage the target audience for the intervention in order to understand the behaviour and influences from their perspective
Develop a prototype intervention
Pilot and monitor the intervention
Evaluate the impacts and processes
Feedback learning from the evaluation

Defra’s 4 E’s model also offers guidance on the development of behaviour change interventions. This stipulates an ‘intervention mix’ that includes demonstrating the right behaviours to take (exemplify), equipping people to take the right action (enable), communicating what needs to be done (engage) and incentivising action (encourage).
Both these approaches bear similarities with the processes associated with adopting a social marketing approach to delivering behaviour change, identified in the project brief as the approach being explored by the Welsh Assembly Government in developing interventions for behaviour change.

1.5 Social marketing

A social marketing approach is defined as “the systematic application of marketing, alongside other concepts and techniques, to achieve specific behavioural goals, for a social good.”\(^7\). Whilst more widely used in health related work, research has highlighted its potential for encouraging pro-environmental behaviour change amongst individuals and households\(^8\). The National Centre for Social Marketing has outlined the following principles (as shown in Figure 2) which define a social marketing approach.

\(^7\) [http://www.nsmcentre.org.uk/what-is-social-marketing.html](http://www.nsmcentre.org.uk/what-is-social-marketing.html)

\(^8\) Darnton et al, (no date)
• **Customer orientation** – Is at the heart of the social marketing approach. A strong importance is attached to understanding where the audience is starting from: their understanding, attitudes and beliefs and the social context in which they live.

• **Audience segmentation** – Audiences should be segmented in order to target behaviours effectively.

• **Behaviour theory and goals** – A focus on understanding existing patterns of behaviour among the audience, and the key influences on the behaviours. Behaviour theories are key to developing this understanding. A clear set of behaviour goals should be devised as a result. These can be divided into practical and measurable stages over time. This can also be broken down into the following aspects:
  - **Insight** – Developers of interventions should gain a deep understanding of what motivates behaviour.
  - **Competition** – Understanding what competes for the audience’s time which may prevent changes in behaviour occurring.
  - **Exchange** – Knowledge of what is being expected of people and the costs to them.

• **Intervention and marketing mix** – A mix of different approaches should be used to reach a behavioural goal.
The principles outlined above feed into a staged process to develop and implement interventions (see Figure 3).

**Figure 3 – Key stages of a social marketing approach | National Centre for Social Marketing**

In this process, emphasis is placed on the scoping phase according to the key principles and concepts outlined above. Evaluation and follow-up are also key in demonstrating impacts the interventions have achieved. Proponents of a community-based social marketing approach also suggest the importance of conducting a pilot to allow assessment of the success of the design of the intervention and also to make adjustments and refinements before full implementation\(^9\).

### 1.6 Summary

- The field of behaviour change theory is vast and still under development. It is however possible to draw out five key areas which influence change:
  - *Personal norms and identity* (our values, attitudes and beliefs)
  - *Social norms and identity* (the influence of the wider social context on our thinking and behaviour)
  - *External conditions* (those things that are beyond our control)
  - *Habits* (routine and automatic behaviours we carry out without thinking)
  - *Learning processes* (scrutinising our everyday actions and why we do them)

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\(^9\) McKensie-Mohr, (no date)
These models don’t account for all the complexities of behaviour but the growing body of literature on best practice in developing behaviour change interventions recommends that they can be useful in understanding the motivators and barriers to change.

Recommendations, among a range of others, include identifying the key influencing factors for behaviours and developing an intervention mix to address a range of these factors.

Adopting a social marketing approach, currently being explored by the Welsh Assembly Government through this research, makes similar recommendations along with the need to identify clear behavioural goals and segmenting audiences to target behaviours effectively.

The points summarised above demonstrate the importance of identifying specific behaviours to target (phase 1 of this research - see section 2) and offer an explanation into the workings of the behaviour change tools being used to by existing interventions (section 3). Finally they also contribute to our thinking on the recommendations for the pilot interventions for Wales.
2 Identifying behaviours

As outlined in section 1.2, the research phase of the project started with the compilation of a long list of domestic energy efficiency behaviour goals which have the potential to reduce carbon emissions. Following the recommendations of a social marketing approach (see section 1.5), the aim was to produce a shortlist of clearly defined behaviour goals.

2.1 How were the behaviours identified?

Initially a long list of behaviour goals that would result in improved domestic energy efficiency was compiled. The focus was limited to behaviours which result in direct improvement of a household’s energy efficiency (for example installing insulation) as opposed to behaviours where energy consumption is more ‘embedded’ (such as purchasing more locally produced food).

The initial long list largely drew on EST’s experience of encouraging and communicating changes within communities and households, but was also verified by a number of sources that have identified energy efficiency behaviours that result in the reduction of carbon emissions. These included Defra’s ‘Framework for pro-environmental behaviours’\(^\text{10}\) which involved the compilation of a list of over 30 behaviours (not confined to energy efficiency) that result in a reduced impact on the environment. Communications materials aimed at encouraging householders to take steps to reduce their carbon emissions, produced by the Welsh Assembly Government among others, were also referenced to ensure that the long list was as comprehensive as possible.

The behaviours were grouped into the following categories:

- Large one off energy behaviours
- No/low cost, frequent behavioural changes
- Appliances
- Heating controls
- Water behaviours
- Renewables

The full list of behaviours is shown in Table 1 below.

\(^{10}\) Defra, (2008)
## Table 1 – Long list of behaviours

<table>
<thead>
<tr>
<th>Behaviour</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Large one-off energy behaviours</strong></td>
</tr>
<tr>
<td>• Loft insulation</td>
</tr>
<tr>
<td>• Cavity wall insulation</td>
</tr>
<tr>
<td>• Solid wall insulation (internal)</td>
</tr>
<tr>
<td>• Gas boiler replacement (Replace a G rated boiler with an A rated)</td>
</tr>
<tr>
<td>• Gas boiler replacement (Replace an E,F or G rated boiler with an A rated)</td>
</tr>
<tr>
<td>• Floor insulation</td>
</tr>
<tr>
<td>• Secondary glazing</td>
</tr>
<tr>
<td>• Double glazing (single to ESTR)</td>
</tr>
<tr>
<td>• Washing at 30°C</td>
</tr>
<tr>
<td>• Install a hot water jacket</td>
</tr>
<tr>
<td>• Primary pipework insulation</td>
</tr>
<tr>
<td>• Draught proofing</td>
</tr>
<tr>
<td>• Turning thermostat down 1°C</td>
</tr>
<tr>
<td>• Avoiding standby</td>
</tr>
<tr>
<td>• Turning lights off - assuming people have not yet replaced all bulbs with CFL's</td>
</tr>
<tr>
<td>• Replacing all normal bulbs with low energy light bulbs (CFL's)</td>
</tr>
<tr>
<td>• Only boil the water you need</td>
</tr>
<tr>
<td>• Line drying in summer instead of tumble drying</td>
</tr>
<tr>
<td><strong>Low and no cost measures</strong></td>
</tr>
<tr>
<td>• Washing up in a bowl rather than a Running tap</td>
</tr>
<tr>
<td>• Using a bowl of water rather than a running tap for shaving</td>
</tr>
<tr>
<td>• One minute less in the Shower</td>
</tr>
<tr>
<td>• Fitting a flow restrictor or eco shower head to a suitable shower</td>
</tr>
<tr>
<td>• One less washing load a week by avoiding half loads</td>
</tr>
<tr>
<td><strong>Water behaviours</strong></td>
</tr>
<tr>
<td>• Installing a room thermostat</td>
</tr>
<tr>
<td>• Installing full set of Thermostatic Radiator Valves (TRV's)</td>
</tr>
<tr>
<td>• Installing a hot water tank thermostat</td>
</tr>
<tr>
<td><strong>Heating controls</strong></td>
</tr>
<tr>
<td>• Replacing an old appliance for new Energy Saving Trust Recommended appliance</td>
</tr>
<tr>
<td><strong>Appliances</strong></td>
</tr>
<tr>
<td>• Installing Solar Electricity Panels (Based on average 2 kWp)</td>
</tr>
<tr>
<td>• Installing Solar Thermal Panel (Based on average 3.5m² system)</td>
</tr>
<tr>
<td>• Installing Biomass Boiler (Wood Fuel) (Excludes switching from Gas)</td>
</tr>
<tr>
<td>• Installing a Wind Turbine 2.5kW (pole mounted)</td>
</tr>
</tbody>
</table>

The next phase of research involved calculating the potential carbon reduction associated with uptake of each of the above behaviours in Wales.
2.2 Identifying carbon impact

The calculations of potential carbon reduction for each behaviour goal involved a number of stages and drew on a number of different data sources. A full list of data sources and further detail of the calculations made can be found in the appendices (provided in a separate document to this report).

The first stage was to assign an individual carbon saving to each behaviour goal. Using the example of installing draught-proofing, the average household in Wales could expect to save 137kg per year of carbon dioxide by taking this measure.

The next stage was to assess the number of households in Wales ‘able’ to complete the behavioural goal. The ‘ability’ to take up each behaviour is an assessment of the current condition of a household, rather than say a reflection of the householders’ financial ability to make the change. Again using the example of draught proofing, data suggests that 26% of households in Great Britain have 60% or less of possible areas draught proofed. When this percentage is applied to the total number of households in Wales, calculations suggest that there are just over 343,000 households in Wales with less than 60% draught proofing.

The final stage was to include an assessment of how ‘willing’ the Welsh population is to take up each of the behaviour goals. This is an important step in the process of identifying target behaviours. There is a need to weigh up the potential impact of each behaviour both according to its carbon impact but also the likelihood of uptake of the behaviour. For example, a high impact behaviour in terms of carbon may have a low uptake amongst the target audience and therefore a lower overall impact. Conversely, there is the possibility that some behaviours with lower carbon impacts will experience greater uptake and therefore have a greater impact overall.

This assessment was made on the basis of responses to the Defra Public attitudes and behaviours survey which included responses from Welsh participants. Respondents to the survey were asked how willing they were to undertake a range of pro-environmental behaviours. The percentage of respondents that were willing to make any given change has been applied to the number of households that are physically able to make the change to give an overall potential carbon impact of both able and willing households. Full data for

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11 Taking into account existing levels of draught proofing and property type.
12 BRE, (2007)
13 Defra, 2009
each of the behaviours is found in the appendices (provided separately to this report). Table 2 below shows a worked example for draught proofing.

<table>
<thead>
<tr>
<th>Behaviour</th>
<th>A - Individual behaviour carbon impact (kgCO2)</th>
<th>B - Welsh households able to implement behaviour (Households)</th>
<th>A x B - Carbon impact of Welsh households able to implement behaviour (tCO2)</th>
<th>C - Welsh households willing to implement behaviour (% of total Welsh households)</th>
<th>A x B x C - TOTAL CARBON IMPACT Welsh Households Willing and able to Implement Measure (tCO2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Draught Proofing</td>
<td>137</td>
<td>343,408</td>
<td>46,888</td>
<td>70%</td>
<td>32,822</td>
</tr>
</tbody>
</table>

The total carbon impact is therefore a reflection of the impact that 70% (willing households) of the households in Wales able to implement draught proofing would have.

2.3 Shortlisting the behaviours

The final step in this phase of the research was to reduce the long list of identified behaviours (as shown in table 1) down to a shortlist to be targeted by the pilot interventions. The following criteria were used to shortlist the behaviours:

- Carbon impact
- Measurability of impact
- Achievability by householders

Each behaviour was ranked on a three point scale for each criterion. These were then weighted, with greater importance being placed on the carbon impact of each behaviour. In consultation with the Welsh Assembly Government, the

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14 The behaviours relating to installation of renewables were excluded at this stage of the process as there is insufficient data available to make an assessment of the number of households ‘able’ to take up these behaviours (e.g. the number of houses with a roof at an appropriate angle for solar PV or solar thermal hot water systems).
outcome of this process was a shortlist of 9 behaviours which were grouped into the following four clusters:

Table 3 – Shortlisted behaviours

<table>
<thead>
<tr>
<th>Cluster</th>
<th>Behaviours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home heating system</td>
<td>Turning the thermostat down by 1 degree</td>
</tr>
<tr>
<td></td>
<td>Replacing E, F and G rated boilers with A rated</td>
</tr>
<tr>
<td></td>
<td>Installing hot water jacket</td>
</tr>
<tr>
<td>Insulation</td>
<td>Installing solid wall (internal) insulation</td>
</tr>
<tr>
<td></td>
<td>Installing loft insulation</td>
</tr>
<tr>
<td></td>
<td>Installing cavity wall insulation</td>
</tr>
<tr>
<td>Improving glazing</td>
<td>Secondary glazing</td>
</tr>
<tr>
<td></td>
<td>Double glazing</td>
</tr>
<tr>
<td>Inefficient appliances</td>
<td>Replace old G rated appliances for A rated</td>
</tr>
</tbody>
</table>
Analysing existing initiatives

Following the identification of a shortlist of target behaviours which could lead to reductions in carbon emissions through improvements to the energy efficiency of households in Wales, the next phase of the research was to identify how householders could be encouraged to take up these behaviours.

3.1 Existing initiatives

The aim of this element of the research process was not to provide a comprehensive mapping of all interventions that can be used to instigate changes in behaviour. Rather, the intention was to conduct a sufficiently thorough review to ensure that a clear ‘state of play’ for the shortlisted behaviours was identified. Drawing on a range of sources, (including web searching, the EST Green Communities database, evaluations of community environment/climate change funds such as NESTA’s Big Green Challenge, Defra’s Environmental Action Fund and the Scottish Government’s Climate Challenge Fund) a total of 49 interventions were identified.

The interventions identified varied widely. Projects were found to be operating at a range of scales, from national, to regional and down to local. Interventions also varied by the body running the project/intervention, however the majority were found to be operating by community sector groups and organisations. These were, however, often backed up by a larger supporting organisation such as the local energy efficiency advice service, or the Energy Saving Trust. Target audience also varied, ranging from projects that are geographically based, targeting all residents within a village or town, to those based in schools targeting teachers, parents and pupils. In general, the interventions targeted a range of behaviours rather than focusing on the promotion of one specific action.

The approaches used to encourage behaviour change also differed widely. However despite the differences in the interventions used by projects identified in this phase of the research, looking across the approaches it is possible to classify a number of ‘tools’ being used to achieve changes in behaviour. These tools are:

- Surveys, checks and audits

Further details of these interventions are available separately in the appendices. The term ‘intervention’ is used in a general sense and is interchangeable with ‘programme’, ‘project’ and ‘initiative’.
• Advisors and champions  
• Reducing costs for householders  
• Group work  
• Pledging  
• Energy monitoring and feedback  
• Communications and events; and  
• Demonstration homes  

3.2 Behaviour change tools – how interventions are working to change behaviour

The next section of this report looks at how each of these tools works by looking back to the theory behind behaviour change as well as providing an example of how they have been applied in practice.

3.2.1. Surveys, checks and audits

This approach is widely used with 27 of the projects identified using surveys or audits in one form or another. This tool is essentially designed to provide individuals or households with information, but on a tailored basis. Generalised communications campaigns can often leave recipients with information overload, not knowing which actions they personally could take, and how to go about taking them. The survey/audit approach is designed to counteract this.

As the survey/audit approach is usually based on a visit to a participant’s house and direct conversation with the participant it can ensure that the information given is relevant to their situation. Presenting information in this way may increase feelings of agency and self-efficacy amongst individuals – surveys and audits identify which behaviours households/individuals can take up and what changes can be made along with, usually, information on how these behaviours can be carried out and what the impact of making changes would be. As a result, individuals are more likely to believe that they are able to make changes, and be more convinced that the changes will make a difference. The process of having a survey conducted can also serve to bring habitual behaviours into an individuals’ consciousness if the survey is designed to cover repeat behaviours, such as turning the thermostat down or turning off lights, alongside one-off behaviours such as installing insulation.

Another reason behind the effectiveness of survey tools is the provision of information from a credible source. When individuals are in doubt, there is a tendency to look to ‘experts’ for the answers on how to act. The survey approach therefore may be more effective when delivered by an organisation or
group considered to be ‘expert’ by the target audience. However, it is important to note that our behaviour is highly influenced by our peers, so involving individuals who are known by, or who are ‘like’, the target audience may also be a means of improving effectiveness of the tool.

Revisiting households after the initial survey or audit is also likely to be a significant part of any approach using this tool. This allows the provision of feedback on how households are progressing towards making the recommended changes, and can provide them with data on the impact they are having thereby reinforcing feelings of agency and self-efficacy.

Finally, surveys and audits may be more effective when used in conjunction with other tools. For example, combining with monitoring tools has a similar effect to re-surveying in that it allows households to see the impact of the changes they are making. Similarly, combining with a pledge tool may give participants an added imperative to make the changes.

SUMMARY: Surveys, checks and audits

- Provide information on a personalised basis to reinforce a sense of agency and responsibility
- Combine with support to help participants complete the changes identified through surveying
- Delivering through ‘expert’ organisations provides credibility, however participants may be more influenced by ‘people like them’
- Follow-up on surveyed households to provide feedback on progress made
3.2.2. Advisors and champions

A distinction is made here between advisors who have technical knowledge and skills (expertise) in the field of energy efficiency and climate change; and champions who gain influence among their peers due to their personality or similarity with the target audience.

Research has shown that we are heavily influenced by who communicates information – we are more likely to act on information if experts deliver it, and the same also applies if we have demographic and behavioural similarities to the messenger\textsuperscript{18}. Advisors can use our tendency to look to experts when in doubt to endorse particular behaviours, and may also be able to use this influence to request changes in behaviour. The effectiveness of using advisors as a tool for

\textsuperscript{17} Based on calculations by HES and CRed as part of HES’ participation in the Big Green Challenge run by NESTA.

\textsuperscript{18} Institute for Government, (2010); Brook Lyndhurst, (2009)
change may be increased if they are part of a group or organisation acting at a local level and/or led by local residents – a key benefit of groups operating at this level is the implicit level of trust that the group can entail\(^ {19}\).

The use of champions draws on a number of elements of behaviour change theory outlined in section 1.3 of this report. Champions can influence behaviour through social norms by demonstrating how they are behaving (descriptive norms) and encouraging others to as they do (peer modelling). Trust is again an important element to consider in the influence of champions. People are more likely to trust and listen to their neighbours, friends and family than instructions from a higher level. Change often happens as a result of our friends and family telling us to do something\(^ {20}\).

Other tools may be particularly suitable for using in conjunction with advisors and champions. It has been proposed, for example, that pledges are more likely to be acted upon if they have been made to a respected or influential individual within the ‘pledgers’ community\(^ {21}\). Linking champions with demonstration projects may also be effective, the theory being that peer modelling and descriptive norms will encourage individuals that come into contact with the champions to take on the behaviours and actions being demonstrated.

**SUMMARY: Advisors and champions**

- Trust in the messenger is important
- We’re influenced by those in positions of expertise
- We’re also strongly influenced by people who are ‘like us’
- Champions can be used to demonstrate/model the ‘correct’ behaviour

**Case study 2 – Energy Champions | Energy Action Devon and Devonport Community Regeneration Partnership**

**Project activities:** Energy Action Devon and Devonport Community Regeneration Partnership worked in partnership with 4th World Ecological Design sustainability consultants to develop this project as part of the Devonport Regeneration Community Project in Plymouth. It involved Energy Action Devon working with volunteer families to act as 'Energy Champions'. Through visits to the home an energy audit was carried out - assessing the type of property, heating methods, building fabric as well as the occupant's behaviour with regard to energy use. Using this information an ecological footprint was calculated, and a report made with

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\(^{19}\) Centre for Sustainable Energy, (2009)

\(^{20}\) Ibid.

\(^{21}\) McKensie-Mohr, (no date)
recommendations for energy saving measures to be installed. The Energy Champion family then had a 'green makeover': a smart meter was installed in the home to accurately monitor their energy consumption and a Sava Flush device to help reduce their water use. In addition, a home visit was made in order to coach the family in 'green behaviours' such as energy efficiency in the home through more efficient use of heating controls and appliance use, smarter driving techniques and consideration of food miles. A follow up visit reported on money and carbon dioxide savings made as a result of installed measures and behavioural changes. The aim of the project was that the Energy Champion family would promote the positive changes made to friends and neighbours in their local community.

**Behaviour change:** All champions reported that they had changed their behaviours. Nearly all champions reported that the energy monitors installed encouraged them to turn many more appliances off and be aware of energy use. All stated that they were much better at turning things off. Five champions also reported friends or relatives making changes and or being interested in the technologies being used with more ‘championing’ expected as families begin to see the impact of the interventions over the winter months.

**Carbon impacts:** Energy Action Devon estimated the carbon savings for 6 households as 20.5 tonnes per annum or an average of 3.4 tonnes each, however the level of savings varied between households.

**Funding the project:**
In total, excluding project management time, the interventions cost £22,479 or £2,248 per household.

### 3.2.3. Reducing costs

Costs associated with taking pro-environmental action can be a significant barrier, whether they are real or perceived. The COI/Define research into attitudes to climate change and environmentally-friendly behaviours in Wales found that it was universally perceived that the consumer has to pay a premium to be environmentally friendly.\(^{22}\) Therefore using cost reduction as an argument to encourage change can be effective, either through highlighting the cost-savings associated with energy efficient behaviours or through reducing the costs of taking up these behaviours. Looking back to the behaviour change theory outlined previously, this tool is aimed at addressing external conditions that are beyond the control of the individual.

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\(^{22}\) Define Research for COI and Welsh Assembly, 2007, Attitudes to climate change and environmentally friendly behaviours in Wales: Qualitative research
Projects identified during this phase of the research have shown that it is possible for community projects to address the issue of cost without having large budgets available to directly fund cost reductions themselves. Examples include helping householders complete applications for grants thereby reducing hassle and effort required to access funding, and negotiating discounts and setting up bulk buying schemes with local suppliers for project participants.

Research has shown that incentivising change through reduced costs depends on factors such as magnitude of the cost reduction and timing. Further insights include that in general we are loss averse, preferring to avoid losses over gains of equivalent amounts. We also prefer smaller, more immediate payoffs to larger more distant ones. 23

Using cost reduction as a behaviour change tool may be effective when used in combination with a number of other tools listed here. For example, combining with either surveys/audits and checks or pledges will provide householders with a means to take action alongside the recommendation of what they should be doing. Combining with energy monitoring and feedback will demonstrate to householders the areas in which savings can be made, and also the impacts as a result of taking action.

SUMMARY: Reducing costs
- Actual or perceived cost of carrying out environmental behaviours is a common barrier to taking action
- Communicate costs in terms of avoiding losses rather than securing gains
- Interventions which prevent loss in the short term are more likely to be successful than those which have an impact in the medium or long term

Case study 3 – RIP CO2 - Reepham Insulation Project | Reepham Low Carbon Communities Challenge

Project activities: Reepham Insulation Project (RIP CO2) started following a CRed Community Carbon Audit showing that only 8% of homes in the village were properly insulated to recommended government standards. The project team identified the following barriers to insulating homes in the village:
- Plenty of information was being disseminated by the council promoting grant funding available and the benefits of home insulation, but the uptake was slow.

Engagement programme with local residents helped explain low uptake – it showed that trust issues were important and that residents were not responding to a council call for action.

- Messages from trusted community members seen to be more effective.
  Grant funding for loft installation required a complex and time consuming application process involving some duplication.

Recognising grant funding was available, the project team approached a local insulation installer and secured a 10% discount for the community in return for promoting their services. The company agreed to help residents with the application process and identify whether they would be required to pay, and if so how much.

The project was promoted through two events held in the village, through the local newspaper, and through word of mouth marketing with the project team attending meetings of local community groups e.g. Rotary Club and mother and toddler group.

**Behaviour change:** 200 households signed up as being interested in the project as a result of the marketing campaign. 6 months after the marketing activities, 25% (50) of the leads had been commercialised. The remainder had been left with a quote and had yet to take up the offer.

**Carbon impact:** No data available.

**Funding the project:** The District Council agreed to support the initiative with £350 for marketing and promotions.

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3.2.4. **Group work**

Using group work as a tool to change behaviour draws heavily on the influence of social norms upon individuals. The wider social context can influence both our thinking and behaviour. As outlined in section 1.3, descriptive norms (how other people around us are behaving) and injunctive norms (what is perceived as right) affect our behaviour in society. The idea here is that being part of a group where environmental behaviours are visible and seen as ‘the right thing to do’ will encourage members of the group to carry out those behaviours. Our desire for approval from our peers can also mean that we model our behaviour on theirs – essentially copying what they do. Group dynamics can also mean that participants may feel ‘peer pressure’ to take up particular behaviours. Similarly, competition might develop between group members which can also serve to encourage change.
Being part of a group can also be a learning experience. Groups can provide a supportive context (either through a group leader or other participants within a group) for individuals to reflect on and then change their behaviours. Being part of a group with common goals can also be a strong influence over behaviour with new social norms being created amongst group members as a result of their journey towards that goal.

The discussions and interactions with other group members can serve to bring habitual, unthought behaviours into an individuals’ consciousness, thereby offering the opportunity to ‘unfreeze’ these habits and create new ones.

As has been mentioned for the use of champions as a tool to change behaviour, people are more likely to trust and listen to their neighbours, friends and family than instructions from a higher level: changes we make are often a result of our friends and family telling us to do something. Group-based interventions frequently involve groups of friends and/or neighbours, with the result that recommendations for change coming from within the group may be more likely to be heard and taken notice of by fellow group members than messages from other sources.

Brook Lyndhurst’s work evaluating community action on behaviour change has found that participating in a group is often not enough on its own and therefore the tool would be more effective if carried out in combination with other tools identified here. Where group members are not directed towards immediate practical actions there is a chance that the group will remain nothing more than a ‘talking shop’. Linking with pledges, for example, will mean group members making a public commitment to making change and, as is discussed in the next section, increasing the visibility of a pledge has an impact on its effectiveness at achieving change. Providing groups with a means to monitor the impact of the changes they are making can also work well in that it increases feelings of agency (allowing them to see the collective difference they can make) as well as potentially developing in-group competition.

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24 Darnton et al., (no date, a)
25 Ibid.
26 Centre for Sustainable Energy, (2009)
27 Brook Lyndhurst, (2010)
SUMMARY: Group work

- Groups can develop pro-environmental behaviour as the social norm
- Groups can provide a supportive context for people to learn, reflect and make changes as a result
- Peer pressure and a sense of competition developed in groups can also encourage change
- Groups need to be directed towards practical action to ensure effectiveness

Case study 4 – Transition Streets | Transition Town Totnes

Project activities: Eight friends and neighbours form a Transition Together group and register with Transition Town Totnes to receive a Transition Together workbook and be assigned a facilitator. The group meets to work together to reduce their electricity, gas and water bills, and also look at local food, reducing waste and consumption, and transport options. Once energy use has been cut, group members are supported to apply for free or low-cost cavity wall insulation, loft insulation and heating system upgrades. The final step is an opportunity to apply for a subsidised solar PV system if the two previous stages have been completed and the property is suitable. A higher level of solar PV grant is available for low-income homes, with South Hams District Council also offering these households access to their low interest loan scheme which is repaid using the feed-in-tariff. A total of 55 groups (440 households) have applied to be part of the Transition Streets project.

Behaviour changes: At this stage of the project the main changes taking place have been habitual energy behaviours in the home (alongside changes in food, waste, transport and water behaviour). Participants are also reporting feeling more connected with the local community and more positive about the future.

Carbon impact: While the project is still ongoing the following carbon impacts have been estimated by the project, and validated by CRed28.

- Average carbon savings per household pa: 1.2 tonnes
- Average financial savings per household pa: £601

By the time all 55 groups or 440 households have completed the programme:

- Estimated total carbon savings pa: 528 tonnes

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28 [http://www.uea.ac.uk/lcic/cred](http://www.uea.ac.uk/lcic/cred)
3.2.5. Pledging

Pledges are a means of encouraging an individual to make a commitment to take a certain action, providing them with a goal or target which will mean changing their behaviour. Pledges or commitment techniques ideally include steps to reach the chosen goal and a timeframe in which it is to be reached. The effectiveness of pledges as a tool can be explained by behavioural theories which highlight our desire for consistency in our values, beliefs, attitudes and actions. Making a pledge or commitment can alter an individual’s perception of their identity – in an effort to be consistent in their identity the commitment is completed and behaviour is changed.29

Research has also shown that making commitments in writing, or publicising commitments can be more effective than simply asking for a verbal commitment, again due to our desire to be consistent – not only to appease internal desires for conformity but also due to our desire to be seen as consistent by our peers. Making public pledges can also harness the persuasive power of social norms. How other people are acting, and what is perceived as right or wrong within a group is also likely to impact on whether commitments to change are kept and completed.

This is recognised in a pilot scheme funded by the Department for Communities, in Barnet. A local organiser is employed to ask residents to pledge to take (or at least to consider taking) actions to reduce their energy usage. Then, when a sufficient number of pledges are obtained, notices are put up on lamp-posts stating that “[x number] of households in [named street] will plug out and walk”30.

The influence of social norms is likely to be greater in groups that are well established, and those where members place greater importance on the opinions of their peers. Related to this is the suggestion that pledges are more

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29 McKensie-Mohr, (no date)
30 Darnton et al, (no date); Institute for Government (2010)
likely to be completed if the pledge has been made to an influential individual within the local community.\(^{31}\)

Social marketing practitioners have also suggested that pledges should only be sought for behaviours which individuals have expressed an interest in doing. The commitment should also be voluntary to be effective. If an individual feels pressured to make the commitment it may be less likely to work.\(^{32}\)

Finally, some researchers have recommended using pledges in combination with other behaviour change tools. Providing information and communications in combination with pledges can highlight to individuals how they might go about achieving their goal. Combining pledges with feedback can also be important to indicate to individuals or households how they are performing relative to their overall goal. As mentioned above, combining pledges with group work may also be a means of increasing their likelihood of success.\(^{33}\)

**SUMMARY: Pledges**

- Make pledges public or at least written down
- Set out steps to reaching the goal and a timeframe to achieve it by
- Commitments may work better in well-established groups and if made to influential individuals within a community
- Pledges need to be voluntary not forced
- Provide feedback on progress towards meeting pledge

**Case study 5 – Low Carbon Living Programme | Low Carbon West Oxford**

**Project activities:** The Low Carbon Living Programme is designed to help householders in West Oxford work towards reducing their carbon impact through providing the following services to participants:

- A detailed carbon footprint showing where you could cut your CO2 emissions
- Free expert advice and help on how to do it, but you decide what is doable for you
- An opportunity to apply for a small grant to help you make energy-saving changes
- Help with applying for government grants
- A free smart meter to help you monitor your electricity usage

\(^{31}\) McKensie-Mohr, (no date)  
\(^{32}\) Ibid.  
\(^{33}\) Abrahamse et al, (2005)
• Opportunities to meet other local residents to swap ideas
• Invitations to attend optional workshops on a number of carbon-busting topics

In return, householders are asked to have their household carbon footprint measured at the start and end of the year and to send in monthly readings of electricity and gas use along with car mileage. The carbon footprint is used as a basis for filling in a pledge form. Householders are asked to think about what they would do before attending a ‘pledging workshop’.

**Behaviour change:** The pledge form identifies a range of possible carbon reducing measures and splits them into four categories: no cost; low cost; investment; and life change. The intention is to allow people to choose freely what they could do and give them a clear idea of the impact their choices will make. Examples of no cost changes completed by participants include turning down the thermostat by one degree and taking showers not baths. Low cost changes include installing a hot water jacket and thermostatic radiator valves. Investment changes include cavity wall insulation or a replacing a boiler for A rated. Finally lifestyle changes include a whole house refurbishment.

**Carbon impact:** In 2009, 38 participating households cut their carbon footprints by 36% (140 tonnes) and some saved up to £200 on their energy bills.

**Funding the project:** A total of £19,146 was used to set up and run the project for a year. This was funded through the Big Green Challenge and sponsorship by the South East England Development Agency (SEEDA). In addition, partnership with EST under their Green Neighbourhoods project led to a further £18,000 funding for installing measures.

### 3.2.6. Energy monitoring and feedback

Using energy monitoring and feedback as a tool to change behaviour essentially provides householders with information on what impact they are having, and also what difference changes in behaviour can make. Looking across the various initiatives identified in this research, two common approaches have been used to monitor householders’ energy consumption and feedback this information to them. These are: using energy monitors, which display the current electricity usage for a household; and requiring householders to record energy meter readings as part of the initiative’s activities.

Again looking back to behaviour change theory, this tool helps to develop feelings of agency and self-efficacy amongst householders taking part. It gives participants the opportunity to see if they are moving in the right direction, ways they can improve, and the results of their actions, thereby fostering and reinforcing a belief that they can make a difference. The process of monitoring
their energy use can also have the effect of making habitual behaviours visible by bringing to light the impact of taking certain actions.

Monitoring and feedback can also be used to provide comparative results between individuals/households and in doing so engender feelings of competition, comparison, or peer pressure which may be especially effective when important or relevant others are used as a reference, or in the setting of a group.\footnote{Abrahamse et al., (2005)}

Research has shown feedback to be a necessary element in enabling householders to control their energy use effectively, with the recommendation that the more frequent and instantaneous the feedback, the more effective it is at sustaining change.\footnote{Abrahamse et al, (2005), Darby, (2006)} However, more recently published research on smart metering has suggested that feedback on energy consumption alone is not enough to deliver significant savings in energy use, recommending that the tool is used in conjunction with other approaches that increase intentions to reduce energy use and provide the social support to do so as well.\footnote{http://www.reuters.com/article/idUSTRE68700A20100908?utm_source=feedburner&ut...}

Therefore, using the approach in combination with tools such as pledging (which sets out a commitment to take action) and groups (which provide a supportive arena for participants) may increase its effectiveness.

**SUMMARY: Energy monitoring and feedback**

- Monitoring and feedback shows participants the impact they are having and the difference that changes are making
- When used in a group setting it can encourage changes through peer pressure and competition
- Monitoring and feedback may be more effective the more frequently/instantaneously it is provided
- Feedback combined with approaches that increase intention to take action and provide support needed to do so may be more effective

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### Case study 6 – Ecoteams | Global Action Plan

**Project activities:** EcoTeams are small groups of households who meet once a month for approximately five months to learn how to reduce their environmental impact, and in doing so measure their waste and recycling production, and energy and water consumption. EcoTeam
leaders are trained in a day-long event and can then access resources and a database for recording participants measurements.

**Behaviour change:** Research has found that EcoTeams acts as a test bed for new behaviours, which then become habit and routine over a longer time frame. Changes made range from habitual no cost such as turning off lights and standby to larger one-off behaviours for example installing insulation.

**Carbon impact:** Since 2000, more than 4,000 UK households have taken part in EcoTeams. In that time they’ve used 21% less energy and lowered their carbon emissions by 17%.

**Funding the project:** EcoTeam leader training days are offered for free thanks to funding provided by Defra. Downloadable resources from the website are also free to access.

### 3.2.7. Communications

General aims of communications are to increase awareness of energy problems and their knowledge of how to address these problems. Communications can range from mass media campaigns to local events and are a commonly used strategy to promote domestic energy efficiency behaviours with the aim of providing audiences with information. Based on behaviour change theory, providing information can serve as a means of increasing agency (individuals know what they should be doing) and self-efficacy (they know that acting will make a difference).

A large body of literature exists on the best ways environmental issues such as climate change and the actions required to address the problem should be communicated[^37] and whilst not reproduced in full here some key points that are worth remembering include[^38]:

- Know the audience and tailor messages accordingly
- Use a credible source to deliver the message, and use personal contact where possible
- Frame messages positively and clearly
- Combine with other tools

This last point is particularly important to take into consideration when designing communications tools. It is now well recognised in the field of behaviour change theory that linear models of change which simply involve an input of information

[^37]: See for example ‘Rules of the Game’ and ‘New Rules, New Game’ produced by communications agency Futerra.
[^38]: McKensie-Mohr, (no date)
do not automatically lead to uptake of environmentally positive behaviours\textsuperscript{39}. Virtually all tools identified here tie in well with communications approaches – for example surveys and audits are essentially a personalised communications campaign. Similarly, using advisors and champions can be a means of conducting communications through credible sources, and using personal contact.

<table>
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<tr>
<th>Case study 7 – Seeding Sustainable Communities</th>
<th>Peterborough Environment City Trust</th>
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<td><strong>Project activities:</strong> ‘Seeding Sustainable Communities’ was a three year programme which sought to introduce environmentally-friendly behaviours to new home owners, using the move to a new house as a catalyst for further behavioural changes. The programme’s staff visited new residents to conduct a short Community Survey, before presenting them with a free Sustainable Living Welcome Bag. This bag contained information about environmental issues; information about the local community; and free environmental goods such as energy efficient light bulbs and Ecover products.</td>
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**Behaviour change:** There was an increase of 14\% of residents who now switch the lights and appliances off more often. There was also an important 35\% decrease in residents leaving stand by on.

**Carbon impact:** No data available.

**Funding the project:** £300,000 over three years.

3.2.8. Demonstration homes

The final tool identified as being used by existing initiatives aiming to improve domestic energy efficiency is the use of demonstrations either through a ‘whole house’ approach or to demonstrate a particular behaviour. This tool works on the premise that by exemplifying recommended behaviours, they will be followed by the target audience. The process of demonstrating and exemplifying behaviours makes them relevant, understood and meaningful\textsuperscript{40}. This links back to the theories of peer modelling and social norms – we can see how others are behaving and adjust our own behaviour as a result. Demonstrations as a tool may also increase feelings of self-efficacy and agency. The target audience is able to see behavioural goals not only as achievable by ‘people like them’ but also the impact of taking up the behaviours.

\textsuperscript{39} Darnton et al, (no date)
\textsuperscript{40} Abrahamse et al., (2005)
As with other tools, using demonstrations to change behaviour may be more effective when used as part of a package of tools. Demonstrations in combination with champions may be successful as, as has been mentioned previously in this chapter, people often respond better to messages from their neighbours, friends and family due to higher levels of trust. If friends and neighbours are able to demonstrate the actions they have taken, individuals may be more likely to do likewise.

**SUMMARY: Demonstration homes**
- Providing a demonstration of behaviour goals shows how others are behaving thereby encouraging wider uptake
- Demonstrations can also be used to show what impact behaviours can have
- Using local homes as demonstrations to the target audience may be more effective due to higher levels of trust of neighbours, friends and family

### Case study 8 – Old Home SuperHome | Sustainable Energy Academy

**Project activities:** Old Home SuperHome is a network of exemplar, old dwellings which have undergone an energy-efficiency retrofit. The aim is to create a network of homes that are local and publicly accessible, within 15 minutes, to nearly everyone in the country. This is occurring alongside the development of an education programme showing how to replicate the techniques, aimed at homeowners, trades people, local authorities and architects, with the aim of changing attitudes and for people to take action to transform their dwellings. To qualify as a superhome, emissions must have been cut by at least 60%.

**Behaviour change:** 64 superhomes have been recruited and open days are being held. This year 20,000 people visited these properties, up from 12,000 last year. Surveys conducted by SEA found that 15% of visitors to superhomes go on to convert their own properties.

**Carbon impact:** No data available.

**Funding the project:** No data available.

This chapter has shown the variety of tools which can encourage changes in behaviour along with reasons why they might do so according to the five key areas of behaviour change theory outlined in section 1.3. The different tools
work on different areas of theory and as such may be more effective when used in combination with each other to form an ‘intervention mix’. These findings feed into the development of recommendations for the pilot interventions, covered in the following chapter.
4 Recommendations

The previous chapter has shown that a wide range of tools are available for encouraging uptake of the shortlisted behaviours identified in this research. These tools are grounded in both behaviour change theory, as well as developing practice around the UK. In this final section we set out our recommendations for the pilot projects that could be taken forward in Wales.

4.1 Parameters

In an ideal world, we would like to be in a position to recommend a pilot intervention of the form:

“Work with 5,000 households in town X over a three month period, using pledge schemes and demonstration homes, to increase the uptake of hot water tank insulation, working with partners A, B and C.”

In reality, there are three main reasons why this is not possible:

- Problems inherent to the state of development of the art of behaviour change – for example one difficulty experienced when attempting to identify effects and attribute causes is the sheer complexity of behaviour. One single influence is rare, with many influences likely to be acting simultaneously. Similarly, evaluations of behaviour change interventions have found it difficult to identify the effectiveness due to over-reporting of change by participants, but also due to changes in a similar direction experienced by the wider population. It is therefore difficult to conclude that one tool is (always and in all cases) more effective than another.

- This study has not investigated particular locations and communities where pilot interventions might take place. An investigation of this kind would provide vital information on possible partners for delivery and the characteristics of potential audiences (and, by extension, the kinds of tools that might work best, and the kinds of behaviours that are most amenable to change).

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41 Bonsall et al., (2009)
The fact that ‘best principles’ indicates that each intervention needs to be tailored to particular locations and their communities (and preferably co-designed with participants). It is only when you get ‘up close and personal’ that behaviours and the influences on them can be properly understood.

Our recommendations therefore specify, as far as possible, the parameters within which the pilots can or should take place: further work will certainly be required before implementation can effectively begin.

In formulating these recommendations, we have been mindful not only of the findings from our research, but also the level of funding likely to be available for the pilots, and a timeframe within which it is hoped that initial results can be achieved.

We have concluded that:

- there should be three pilot projects
- they should each have a common structure, based on best practice principles
- they should each address three of the four behavioural clusters (see Table 3), with the precise focus depending on local community circumstances
- they should make use of a finite selection of the tools identified
- they should be delivered through local partnership entities

In remainder of this section, we explain and expand upon each of these. We conclude with some remarks about costs, carbon and potential replication.

### 4.2 Recommendations for pilot interventions

Our recommendations for the pilot interventions broadly follow the key stages of a social marketing approach (figure 4) and are guided by the theories of behaviour change and best practice principles outlined in sections 1.3 to 1.5 of this report.
4.2.1. The pilot interventions

It is important to consider the potential for replication should the pilots prove successful. Expending the full budget available on one single pilot could prove counter-productive in two ways. Firstly, funding for projects replicating the approach may not be available in as large an amount. Secondly, community organisations can find managing large amounts of money difficult, preferring to work with smaller budgets.

We therefore recommend a series of interventions with budgets matched to those feasibly available to community projects to conduct behaviour change projects in the future. With the level of funding likely to be available, **three pilots** would seem possible. The reasons why three pilot interventions are suggested are as follows:

- Allowing for the fixed costs outlined in section 4.1.2, the funding likely to be available would still provide sufficient funds for the running of three pilot interventions.
- Developing multiple interventions will allow for the piloting of different approaches – different combinations of the behaviour change tools described in chapter three within the structure recommended for the interventions in section 4.1.3.
With three interventions it will be possible to pilot across Wales - north, south and central. Interventions can also be piloted in different localities, for example two urban (one city, one market town) and one rural.

### 4.2.2. A common structure

The commonalities associated with each of the interventions can be described as ‘fixed costs’ and are mainly related to the scoping and evaluation stages illustrated in the key stages of a social marketing approach above.

#### Scoping the audience

Firstly, once the locations for the pilot interventions have been finalised, to abide by the best practice principles outlined above it is important to gain an understanding of the target audience. Suitable resources will need to be allocated to this exercise. Questions to consider include:

- Where the audience for the project is currently at in terms of energy efficiency behaviour
- What barriers they are currently facing which prevent them undertaking the shortlisted behaviours
- What would motivate them to take action

Conducting this research will be vital in understanding which tools and combinations of tools will be the most appropriate for the audience in question.

#### Evaluation advisory support

Conducting a thorough evaluation of the pilots will be key in order to understand the effectiveness of the interventions and to identify where any augmentations and improvements are needed before replication. Experience has shown that third sector organisations often lack the skills (and also the allocation for evaluation in the project budget) and time to develop and conduct a thorough evaluation of their project’s activities. Our work with projects funded by Defra’s Greener Living Fund, for example, has included the provision of evaluation support in the form of an evaluation handbook and an evaluation advisor to assist projects in developing evaluation plans and conducting them successfully. It is our recommendation that a similar approach be adopted here and should therefore be included in the overall budget for funding the pilot interventions.

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43 The handbook included guidance on evaluation methods as well as providing projects with standardised questions which will allow comparisons to be made across different approaches.
Given that the ultimate aim of the interventions will be to reduce carbon emissions, monitoring carbon impact will form an important part of the evaluation. A skills gap is likely to exist in the ability of community organisations and groups in both monitoring and calculating the impact of the intervention in terms of carbon emissions. External input from an expert organisation to train and support the projects in carrying out this element of the evaluation would therefore be appropriate, and funding should be allocated accordingly.

It is also the case that, rather than being seen as a painful ‘add-on’, evaluation can best be done as an integrated part of the ongoing monitoring and learning associated with a project. This can both assist with value for money and improve the potential success of the scheme.

4.2.3. Suggested tools and combinations

Whilst there is a lack of evidence which would allow the definitive recommendation of one tool over another, the evidence gathered for this study together with our evaluations of community-based activity on climate change for a number of funding schemes allow us to make a number of suggestions for an outline of elements to be included in the pilot interventions. These are described in full below and summarised in figure 5:

- **Using surveys, checks and audits** – Finalists in the Big Green Challenge which directly focused on energy (rather than a more general focus on sustainable living) achieved the highest carbon emissions reduction. A common feature of these finalist projects was having home energy checks as a key behaviour change tool, providing participants with tailored information on the current impact of their home and lifestyle along with recommendations for actions to reduce impact. Linking with an expert, or expert organisation, can plug any skills gaps which exist in community organisations and also serve to add credibility to the process amongst the target audience.

- **Provide a means of action as well as a call** – It is important to back up the use of a survey tool, which provides participants with recommendations on what they can do, with a means of putting the recommendations into action. In the case of the finalists in the Big Green Challenge, for example, their energy checks were always backed up with referrals or signposting services which outlined the support available to

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44. Brook Lyndhurst has undertaken evaluations for Defra for their Environmental Action Fund and Greener Living Fund (ongoing), for NESTA for the Big Green Challenge, for DECC for the Big Green Challenge Plus (ongoing) and for the Scottish Government’s Climate Challenge Fund (ongoing).

carry out the recommendations. More hands-on support to access grants or expert advice was also a common part of the package. As a result, combining surveys, check or audits with tools such as advisors and cost-reductions will also be important.

- **Encourage action within a given timeframe** – Setting a timeframe in which action should be taken will be important, both to encourage individual change (see section 0) but also to maximise impact during the lifetime of the pilot. Pledging and target setting are appropriate here, linked to the results of the survey.

- **Monitor action and feedback to participants** – Given the necessity of conducting a thorough evaluation of the pilots, including monitoring and feedback as a tool in the design of the intervention is appropriate. It is important not only to record which behaviours have been taken up, but also the impact of the behaviours. Results should be fed back to participants on a frequent basis to give a sense of the impact they are having and therefore encourage the changes to ‘stick’ and also further changes to be made.

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**Figure 5 – Pilot interventions | Suggested tools and combinations**

- **Survey, check or audit**
  - Provide tailored information
  - Link to recommendations for action

- **A means to take action**
  - Provide hands-on support to complete recommended actions
  - Link to other tools, e.g. advisors or cost-reductions

- **Set a timeframe**
  - Maximise impact in the timeframe of the pilot
  - Use pledges and set targets

- **Monitor and feedback**
  - Record what behaviours are being changed
  - And what impact this has
  - Communicate results to participants

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4.2.4.  Developing and implementing pilots

The parameters for pilot projects outlined above aim to narrow down the wide range of permutations and combinations of the behaviour change tools and interventions we have reviewed. Our suggestion is to use the approach described above as an outline for developing three interventions in collaboration with the community sector organisations that will ultimately be responsible for carrying out the intervention.

Where possible, the pilots should be linked to existing initiatives with similar goals. Evidence suggests that this can be highly effective, with the added bonus of being less time consuming than developing initiatives from scratch. Working in this way also allows interventions to build on the trust and credibility that projects will have established with their communities. Maintaining a consistent focus can also be important for community groups – sidetracking from their mission focus can have a negative impact on levels of engagement and interest in the community.

It is also important for communities and community organisations to feel ownership and control of the intervention, rather than it being imposed onto them. The ability of a local community to shape a project in response to local need has been described as critical to success. As such we recommend a mini-tendering process in each of the locations for the pilots. Community groups would be invited to submit their ideas for interventions based on the results of the scoping research and bearing in mind the outline suggestion for an intervention above. Whilst this may seem time consuming, we believe it a necessary step in securing buy-in for the interventions which will ultimately affect their success.

Our recommendation here would also be to form links with the local authority in the locations decided upon, potentially as a means of accessing local community organisations. Linking with these local organisations will ensure that the intervention will have the local control, ownership and relevance that has been described as essential for success. Local authorities can play a role in facilitating and supporting local organisations, for example through providing access to support and resources. Buy-in from the local authority can also build trust and confidence at a local level by demonstrating that those in authority have recognised a need to act and a responding appropriately.

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46 Centre for Sustainable Energy, (2009)
47 Ibid.
48 Centre for Sustainable Energy and Community Development Xchange, (2007)
49 Centre for Sustainable Energy and Community Development Xchange, (2007)
50 Ibid.
51 Ibid.
4.2.5. Costs, carbon and replication

Costs
As described in section 4.1.2, two common costs exist for development of the pilot interventions – the scoping audience research and the provision of evaluation support. Our suggestion is that approximately ten per cent of the likely available budget be assigned to conducting the scoping research that will be vital in both confirming the clusters of behaviour to be promoted and deciding on the final combination of behaviour change tools to be used. In terms of evaluation support, we recommend apportioning approximately twenty per cent of the likely available budget to allow a thorough evaluation of both behaviour changes and associated carbon impact.

The remainder of the funding budget for each pilot will be entirely dependent on the details of the interventions that are developed from what tools will be used, to what organisation or partnership of organisations will be involved in delivering the pilot.

Carbon
The lack of a definite location, scale, duration, audience and delivery partners for the pilot interventions at this stage, coupled with the complexity of behaviour change, makes it difficult to provide an accurate assessment of the carbon impact that could be expected. Once these details are finalised, the process used here to identify the shortlisted behaviours may be useful in assessing the potential impact of the pilot interventions.

Replication
Our final recommendation is that the detailed evaluation of the pilot interventions should be the basis for any plans for replication. Communicating the results of the pilots will allow communities and delivery organisations alike to learn from the experiences and develop interventions accordingly.

51 For further advice on the role of local authorities in supporting and developing community initiatives on climate change based on the experience of the Big Green Challenge, see the following report by NESTA – ‘Working with communities to tackle climate change: Practical approaches for local government’ http://www.nesta.org.uk/library/documents/Working-with-communities.pdf
4.3 Summary

- There are a range of behaviour change tools available to encourage uptake of the shortlisted domestic energy efficiency behaviours identified through this research.
- There is a lack of definitive evidence on the impact, costs and benefits of community initiatives designed to secure individual behaviour change to be able to suggest that one approach is more effective than another. Nevertheless, there is plenty to work with in order to develop recommendations for the development of pilot interventions.
- Three pilot interventions should be developed to allow testing of different combinations of behaviour change tools, to test the tools with different audiences and to fit with the level of funding likely to be available for completing the pilots.
- In each case, scoping research of the audience for the pilots should be carried out to inform the final design of the interventions. Understanding current levels of energy behaviour, motivations and barriers to taking action will be key inputs to the development of the interventions.
- Thorough evaluation of the interventions is vital to understanding their effectiveness. Evaluation support should be provided to delivery organisations in order to fully assess behaviour changes achieved and the associated carbon impacts.
- Using a survey, check or audit tool has been a key feature in a number of community based interventions which have successfully achieved reductions in carbon emissions. These should be linked with other tools in order to provide householders with a means to act on the results of the survey, along with a timeframe in which actions need to be taken by. Linking with the need for evaluation, providing feedback to participants can also influence the effectiveness of the intervention.
- Pilot interventions should be linked with existing initiatives with similar goals to build on the trust and credibility established within the community. This is particularly important given the timeframe for the pilots.
- Delivery organisations should be directly involved in the final design for the interventions in order to achieve buy-in and ownership of the projects.
- Forming links with local authorities (and potentially other support agencies) can be a way of building local trust and credibility, but also a way of providing support to the community delivery organisations.
- A proportion of the funding available for the pilot interventions should be set aside for both the scoping research and evaluation support.
- An assessment of the potential carbon impact of each pilot intervention can only be made following finalisation of the details – for example location, audience, scale and duration. This can build on the evidence gathered here to identify the carbon impact of the individual behaviour changes.

- Results from the evaluation of the interventions should be communicated, and plans for replication should be based on the findings.

**Figure 6 – Pilot interventions | Summary of recommendations**

**Scope**
- Research the target audience
- What are their current actions?
- What barriers stop them taking further action?
- What would motivate action?

**Develop**
- Three pilot interventions
- Use scoping research to identify appropriate behaviours from the shortlist and behaviour change tools identified
- Use surveys, checks and audits
- Provide a means of action as well as a call
- Encourage change within a given timeframe
- Provide feedback on impacts and achievements

**Implement**
- Form links with local authorities
- Collaborate with community sector organisations
- Integrate with existing project activities

**Evaluate**
- Monitor changes in behaviour and carbon impacts
- Provide evaluation support

**Follow-up**
- Communicate results
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