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Climate Change Engagement – Assessing the Impacts of the Climate Challenge Fund

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1 Executive summary

1.1 Aims and background

The Scottish Government established the Climate Challenge Fund (CCF) in 2008 to help local communities in the transition to a low-carbon society. The fund supports community-led projects which lead to reductions in carbon emissions, and which are designed to leave a sustainable legacy of low-carbon behaviour. It works in areas such as energy efficiency, sustainable and active travel, reducing and recycling waste, and food growing. As of mid-2020, over 1,150 projects across all Scotland's 32 local authorities had been awarded CCF grants, with total funding since 2008 exceeding £111 million.

This report considers the evidence for the fund's impact on the ground, the actions that were (and perhaps not) effective and how we can monitor success in the future. The research centres on in-depth case studies of five CCF projects which the team followed for 18 months. The report uses the case study evidence to understand and capture the processes of change supported by the CCF. From this, it draws out lessons on how to facilitate and monitor such impact going forward.

The James Hutton Institute was commissioned by ClimateXChange, Scotland's centre of expertise connecting climate change research and policy, to carry out this study.

1.2 Findings

1. **The CCF's community focus allows it to play a unique role in Scotland's transition to a low-carbon society.** This research identifies that CCF projects contribute to Scotland's transition to a low-carbon society at the community level in two ways:

- **By directly helping people to explore and adopt low-carbon behaviours; and**

- **By building community capacity to embed a legacy of continued bottom-up change that can also support larger-scale policy interventions.**

2. **The CCF's unique contributions are not adequately captured through the lens of carbon emissions.** This echoes findings from earlier reviews of the CCF.

   The "Climate Change Engagement" framework developed through this research offers an alternative means for capturing CCF project impact. The framework considers behaviour, knowledge and social norms. The idea of climate change engagement builds on existing concepts of Climate Literacy and Carbon Literacy; the Scottish Government's ISM (individual, social, material) model of behaviour change; previous reviews of the CCF; and academic literature. It has been examined robustly throughout the research process against CCF project experiences on the ground.

   There is evidence that CCF projects are already delivering on all of the different elements of Climate Change Engagement. CCF projects are:

- **Influencing community members at every stage of the process of behaviour change.** Behaviour change is not a one-off event. CCF projects are successful in promoting discovery of and interest in new behaviours as well as providing opportunities for trial and learning. Occasionally, project participants consolidate a pro-environmental behaviour by forming a new habit or making a one-off change in behaviour. It can be difficult to discern changes in pro-environmental behaviour **at the level of the whole community**.
- **Increasing community members' knowledge about climate change.** CCF projects use both active and passive strategies to develop knowledge about climate change and carbon footprints. CCF projects seem to have the most impact on people with least prior knowledge, increasing awareness and understanding not just of climate change but of environmental issues more generally.
- **Well placed to change social norms in their communities.** CCF projects can influence what is seen as "normal" by reaching many (different types of) people in their communities. They can also use their position within the community to influence participants and partner organisations, changing what's "right".

  The CCF programme should seek to address all the elements of Climate Change Engagement. Overall, these findings suggest that the more that CCF projects individually, and the CCF programme as a whole, can address all the elements of climate change engagement – behaviour, knowledge and social norms - the more successful they will be in contributing to Scotland's low-carbon transition. Treating behaviour change as a process feeds directly into "helping people to explore and adopt low-carbon behaviours". Addressing knowledge and social norms contributes to "building community capacity to embed a legacy of continued bottom-up change that can also support larger-scale policy interventions".

3. **Current carbon-focused CCF monitoring and reporting processes present several limitations.** Reporting carbon emissions reductions is a heavy burden for CCF project teams. Some project activities lead to more *easily quantifiable* carbon savings than others and the current emphasis on carbon can lead CCF projects to focus on these to the detriment of other activities that would support climate change engagement more broadly. Findings from this research suggest that carbon emissions reductions are often an example of a "disconnected measure", where the chosen indicator does not really monitor the main activities of a CCF project.

We suggest reporting along the lines of the proposed Climate Change Engagement framework. This would provide a good basis for assessing and reporting on the CCF's non-carbon but still climate-related impacts. This may require a more qualitative or narrative approach to reporting. Guidelines and examples would need to be developed in order to do this in a robust way.

Reporting processes need to be realistic about what CCF projects can achieve, given the short funding and reporting period. Some behaviours are difficult to change and to capture within short timescales. Furthermore, if reporting processes could be aligned more closely with the types of information that CCF projects are already collecting in the course of their work, the reporting burden could be reduced.

It is important to separate supporting and assessment functions in the reporting process. This research has demonstrated the value of a reflective approach to evaluation. Approaches used in this research could be incorporated into the CCF support function. However, this will only work in a supportive context where openness about problems is encouraged. The "regional hubs" model for the future delivery of the CCF programme may be able to incorporate this role.

4. **The CCF programme faces similar issues to other community empowerment policies.** As such, its design could usefully reflect the barriers and opportunities faced by community projects in general. CCF projects do not exist in a vacuum, they are embedded within their community's organisational patchworks. This research identified several ways to support CCF projects to capitalise on this community-embeddedness.

   CCF projects could be given more guidance and support to identify and respond to their communities' specific characteristics. This research found that CCF projects which had a strong understanding of the "who", "where" and "what" of their community were able to design more relevant and therefore more impactful interventions. Community-based projects are uniquely placed to understand the particular needs of people living in their local area and to design bespoke, practical activities that result in impactful climate change engagement among community members.

   The CCF funding approach should reflect diverse community capacities. Community organisations are diverse and have varied capacities to deliver a successful programme of activities. This research identifies some key elements that make a CCF project more successful regardless of the particular activities it is promoting. These include levels of creativity, use of volunteers, facilitating teamwork, skill of staff/coordinators, extent of partnerships, clarity of vision, organisational lifetime, and access to space. These factors could usefully be taken into account in the funding process.

   The CCF programme could empower projects to be adaptive over the course of the funding period. Impact could be increased by allowing CCF projects to be flexible and adapt to changes in public opinion and national mood (e.g. awareness of single-use plastics) and to translate these emergent opportunities into activities that are relevant to their community. Some of the case study CCF projects examined through this research felt more able to expand beyond the originally planned programme of activities they had written into their funding proposal than others.

1.3 Recommendations

Table 1 summarises the seven key recommendations this report offers for the CCF programme.

Table 1: Recommendations

Moving Beyond Carbon Emissions	
1	The CCF programme should seek to address all the elements of Climate Change Engagement.
Better Capturing and Reporting CCF Success	
2	We suggest reporting along the lines of the proposed Climate Change Engagement framework.
3	Reporting processes need to be realistic.
4	It is important to separate supporting and assessment functions in the reporting process.
Making the Most of the CCF's Community Focus	
5	CCF projects could be given more guidance and support to identify and respond to their communities' specific characteristics.
6	The CCF funding approach should reflect diverse community capacities.
7	The CCF could empower projects to be adaptive over the course of the funding period.

Contents

2 The Climate Challenge Fund: a community-based climate policy instrument

For over a decade the Climate Challenge Fund (CCF) has been the Scottish Government's primary policy mechanism for engaging communities in addressing climate change. Various reviews have highlighted the challenge of capturing the impact of such engagement. This report examines the influence of projects funded by the CCF in enabling low-carbon transitions in their communities. Our focus has been on understanding the extent of engagement, awareness raising and behaviour change amongst the local communities where groups have been working on climate change projects. We also wanted to learn how the CCF could be more effective in engaging communities to address climate change and how success can be measured.

2.1 The Climate Challenge Fund

The CCF funds community-based organisations to undertake practical projects in their community to contribute to Scotland's transition to a low-carbon society. Currently managed by Keep Scotland Beautiful on behalf of the Scottish Government, the CCF programme has funded over 1,150 community-led projects across all 32 local authorities in Scotland since 2008. As of mid-2020, total funding exceeded £111 million.[1]

2.2 Policy context

The CCF programme is grounded in two central Scottish Government policy agendas – climate change action and community empowerment. This community focus is rare amongst climate change policies, but it addresses the idea that a "cultural shift" is necessary to achieve the low-carbon transition:

> *The transition to a low-carbon Scotland will require significant lifestyle changes for most people, impacting on the ways we get around, how we heat our homes, buy our food, and the goods we consume. This will mean a whole cultural shift over the coming years.*[2]

Both the 2010 Scottish Government Low Carbon Economic Strategy[3] and the more recent 2018 Climate Change Plan[4] (CCP) describe the CCF as a mechanism to engage individuals and communities in that transition. The CCP states that the CCF "*helps ensure that communities are empowered, equipped and supported to deliver low carbon solutions to local issues on their own terms*". This echoes the underlying principle of the

[1] Keep Scotland Beautiful (2020) website (accessed August 2020): https://www.keepscotlandbeautiful.org/sustainability-climate-change/climate-challenge-fund/.

[2] Scottish Government. (2013). *Low Carbon Scotland: behaviours framework*. Available from (accessed October 2020): https://www.gov.scot/publications/low-carbon-scotland-behaviours-framework/.

[3] See (accessed October 2020): https://www.webarchive.org.uk/wayback/archive/20170701074158/http://www.gov.scot/Publications/2010/11/15085756/0.

[4] Scottish Government. (2018). *Climate Change Plan: third report on proposals and policies 2018-2032 (RPP3)*. p. 36. Available from (accessed October 2020): https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/.

CCF (also set out in the CCP) that "*the best people to decide the future of our communities are the people who live in those communities*".

A transition to a low-carbon society is urgently needed. This transition has to involve all sectors of society, including public, private and civil society. It will "*require significant lifestyle changes for most people, impacting on the ways we get around, how we heat our homes, buy our food, and the goods we consume. This will mean a whole cultural shift over the coming years.*[5] Community-based projects, sitting between the 'macro' structures of society and the 'micro' structures of the family and household, could play a significant role in helping to develop low-carbon cultural norms in everyday practices, such as eating, shopping and getting about.

2.3 Defining the CCF's unique contribution

This research offers evidence that CCF projects provide concrete ways for people to relate to climate change (and other environmental issues) as well as practical ways to become involved in what can be a difficult concept to grasp. Importantly, the community focus bridges the gap between the individual level and the national level. While change is needed on a national scale, people live in communities which is the scale at which cultural shifts can happen.

Evaluating the ways that CCF projects engage people in addressing climate change has been difficult to measure.[6,7] CCF projects are diverse, covering a wide range of different activities and a large number of everyday behavioural domains including transport, energy use, food and waste. People's behaviours in relation to, and their understandings of, climate change are influenced by many sources. This makes a cause and effect relationship difficult to demonstrate. Yet carbon reductions can be quantified and can contribute to national targets on reductions of greenhouse gas emissions thus making it an attractive measurement tool.

A new way of assessing the impact of community-based projects on tackling climate change (and other environmental issues) was, however, needed. Such an approach would need to capture the multiple practical ways that people become involved in climate-related activity within their community.

Community projects have a unique ability to grow 'bottom up', working with the community and engaging individuals in specific activities that can support short-term individual behaviour change, increase community capacity for future change, and build support for wider climate change action.

In summary, this research provides evidence that CCF projects contribute to Scotland's transition to a low-carbon society at the community level in two ways:

- by directly helping people to explore and adopt low-carbon behaviours; and
- by building community capacity to embed a legacy of continued bottom-up change that can also support larger-scale policy interventions.

[5] Scottish Government. (2013). *Low Carbon Scotland: behaviours framework*. Available from (accessed October 2020): https://www.gov.scot/publications/low-carbon-scotland-behaviours-framework/.

[6] Brook Lyndhurst & Ecometrica. (2011). *Review of The Climate Challenge Fund: Full Report* [Report]. Retrieved from Scottish Government Social Research website (accessed October 2020): http://www.scotland.gov.uk/Publications/2011/06/28142748/0.

[7] Hilliam, A., Moir, S., Scott, L., Clark, T., Smith, I., & Changeworks. (2015). *Review of The Climate Challenge Fund* [Report]. Retrieved from Scottish Government Social Research website (accessed October 2020): http://www.scotland.gov.uk/Publications/2011/06/28142748/0.

Key Finding: The CCF's community focus allows it to play a unique role in Scotland's transition to a low-carbon society.

2.4 The challenge: measuring the CCF's contribution

Previous reviews of the CCF programme[8,9] have identified a wide range of positive impacts for communities and individuals from CCF projects. These reviews have also highlighted difficulties evaluating these impacts, both individual projects and the programme as a whole.

A key challenge is the long timescale over which change towards more low-carbon behaviours occurs. Monitoring shifts to low-carbon behaviours is difficult beyond the end of the timescale of a 1- to 3-year funded CCF project. Defining measurable behaviour change outcomes is problematic; establishing baselines was often done too late and survey response rates are often low. At the level of the whole programme, complications lie in how to aggregate impacts across multiple locally based projects at national scale in a meaningful way.

To date, considerable effort has been focused on developing robust ways to quantify the carbon emissions reductions achieved by funded projects. Less work has gone into the "non-carbon" impacts, what have broadly been called "community outcomes". This has been noted in previous reviews:

> *The focus on carbon-saving and its purpose for CCF projects needs to be reviewed. The high importance of carbon means that it is used as one tool to assess the merits of projects at panel stage, but the research suggests that other ways to measure success for a community-based climate change project may need to be developed, alongside carbon*.[10]

And:

> *As one respondent described, funding should focus on community development, capacity-building and cultural change (as these were the key strengths): "if your main aim is reducing carbon then this [CCF] is not the way to do it*".[11]

In response, a focus on Climate/Carbon Literacy has emerged as a potential measurable impact of the CCF projects. This is now a criterion for funding and CCF project staff/volunteers and/or community members can take a "Carbon Literacy for Communities" training course. However, there is still work to do to develop guidance for monitoring and evaluating the non-carbon impacts of CCF projects.

Key Finding: The CCF's unique contributions are not adequately captured through the lens of carbon emissions.

[8] Brook Lyndhurst & Ecometrica. (2011)., op. cit.

[9] Hilliam et al., (2015), op. cit.

[10] Hilliam et al. (2015), op. cit., p. 47.

[11] Hilliam et al. (2015), op. cit ,p. 43.

2.4.1 Research focus

The research team followed five case study CCF projects for 18 months (April 2017-October 2018). These were selected to be diverse in terms of location, socio-economic characteristics, activities and funding history (for details see Appendix J Project case studies). Through workshops, interviews, surveys, document analysis and participant observations the research carried out an in-depth investigation to address the following questions:

- How do perceptions of, and actions towards, climate change alter during and after the course of a CCF project, among both active participants and the wider community?
- What are the factors in terms of project design, community characteristics and wider context that affect CCF projects' ability to facilitate action towards climate change?
- What methods, concepts and indicators might best capture the diverse activities and impacts of CCF-funded projects to better aid monitoring and evaluation of their impacts?
- What perceptions and aspirations do active participants, the wider community and external stakeholders have of CCF projects, and the community-based model of social change, for the potential to contribute to wider societal transitions?

Details of the research design, including description of the individual methods and analytical approach for each method, can be found in Appendix K (Research approach).

3 Understanding climate change engagement: our framework

This research has identified several interrelated factors that demonstrate the contribution of CCF projects to Scotland's transition to a low-carbon society at the community level. We have conceptualised these in the form of a **Climate Change Engagement** framework**,** shown in Figure 1. It considers what CCF projects are doing through the elements of behaviour, knowledge and social norms. It provides a lens through which to explore how CCF projects are bringing about change in their communities with respect to climate change.

Key within the framework are the following:

- CCF projects are taking people through a process of behaviour change which involves more than just the final adoption of more climate-friendly behaviour. The distinct components include: discovery, interest, trial, learning and consolidation (i.e. final adoption).
- CCF projects are spreading knowledge about climate change, including both understanding it as an issue and understanding the linkages between one's behaviour and climate change.
- CCF projects are affecting social norms within their communities. This exerts social pressure on individuals in two ways, by changing norms about 'what is the right thing to do' (injunctive social norms) and 'what is the normal thing to do' (descriptive social norms).

These three elements cover the range of impacts that CCF projects have on the ground, helping to unpack and understand exactly *how* CCF projects contribute to Scotland's

low-carbon transition. Appendix A provides a detailed description of the Climate Change Engagement framework and its development.

Key Finding: The "Climate Change Engagement" framework developed through this research offers an alternative means for capturing CCF project impact.

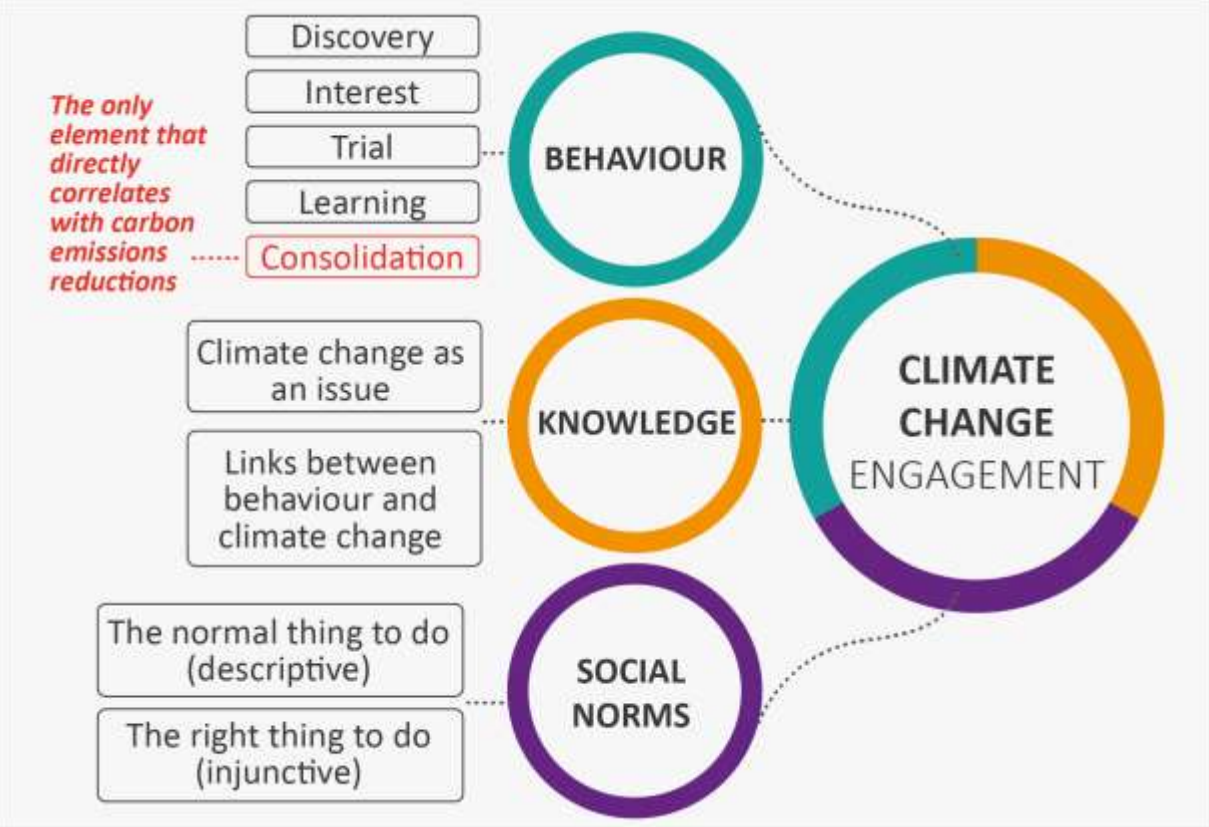

Figure 1 : Climate Change Engagement framework illustrating the three core elements - Behaviour, Knowledge, Social Norms - and their individual components

3.1 The evidence for climate change engagement

Using the Climate Change Engagement framework, this research identifies a range of substantive impacts that CCF project activities have on behaviour, knowledge and social norms within the community. We also identify routes through which the CCF case study projects have reached their community audiences to promote such engagement. See Appendices B (CCF project impacts) and C (CCF project design) for a detailed discussion of the types of impacts and how CCF projects have gone about facilitating (or not) such impacts.

Key Finding: There is evidence that CCF projects are already delivering on all of the different elements of Climate Change Engagement.

3.1.1 Encouraging low-carbon, climate-friendly behaviours

Activities undertaken by the case study CCF project promoted **discovery of climate-friendly behaviours** by being accessible and visible within their communities so that people can see and/or hear or read about them in the course of daily life. Broadly, the case study CCF projects utilised physical and or (social) media presence to raise their own visibility and, by extension, the opportunity for discovery.

The case study CCF projects promoted their presence and activities in several ways which helped community members to discover the climate-friendly behaviours that the projects were trying to encourage.

Examples include:

- Locating a re-use shop in the main high street rather than down a side street and designing the shop window to attract the attention of those passing by.
- Positioning charging points of car club electric vehicles in the main town centre car park and railway station to increase the visibility of the vehicles to non-car club members and raise curiosity.
- Actively linking with a Facebook site to encourage exchange between sellers and buyers of unwanted or no-longer-needed items or placing a half-page feature (about an event or giving information) in the local weekly newspaper.
- Volunteering also provided a route to discovery, with volunteers using their networks and friends to widen the pool of participants to be introduced to new behaviours.

This quote from an interviewee captures the element of discovery:

> *They can see [the electric/car club vehicles] when they're passing through the spaces and there's obviously stuff in the local newspapers and stuff…* (interviewee, Rural Town case study CCF project)

Project teams use a combination of rational, social and emotional triggers to **develop interest and motivation to try climate-friendly behaviours** through, for example, organising events, activities, workshops; offering services and/or training; or having a presence on social media. Examples from our case studies include:

- Offering services, such as having a household energy review to identify areas where energy savings can be made.
- Holding events, such as fashion shows or film nights, which promoted the project and put its activities into a wider context to encourage interest and motivation to change behaviour.
- Joining with other community organisations for a variety of activities - beach clean-ups, monthly market days, annual festivals and galas.

One interviewee expresses the interest element of climate change engagement in the following way:

> *You can tell them how they can do it [home energy saving], but they want to keep talking about it, but not actually do it. So, it's converting the rhetoric to the reality and it's that barrier… which is the big hurdle.* (stakeholder interviewee, City Centre case study CCF project)

Trying out (trialling) a new behaviour for the first time is a critical juncture because it is visceral. If it is a positive experience, people are more likely to pursue the new behaviour. Because positivity is subjective, and differs from person to person, projects have adopted a wide range of ways through which to encourage people to trial new,

climate-friendly behaviours. These were usually more successful within a setting that encouraged, reassured and fostered an individual's curiosity. Examples from our case studies include:

- Offering regular and informal sessions for people to do an activity together where they can experience what it feels like to do a particular behaviour. Activities within our case study CCF projects included gardening, sewing or craft work, learning to ride a bike and cooking.
- Creating supportive environments for people to try out new behaviours, make mistakes or ask questions without being made to seem foolish in front of others.

An interviewee expresses the trial element as like moving from a state of passivity into a state of interest and involvement:

> *Then when I started a little bit it just like sky-rocketed my interest. So, I think what shows me is that like…to get people interested they need to be involved because I think before I was involved I was just sort of like…a passive recipient you know?* (interviewee, Accessible Town case study CCF project)

Combining formal activities with less formal peer-to-peer interaction provided community members with opportunities to **learn how to enact a behaviour**, including acquiring necessary skills. For more complex behaviours or big one-off decisions, the support of CCF project staff and volunteers was critical. Learning a new behaviour was often linked with the trial element. Examples of ways in which case studies in this research promoted learning include:

- Creating times and spaces where people can practice and develop the new behaviour until they feel they are competent at it. This can include gardening sessions, regular cycling sessions, volunteering in a re-use shop, making items for a specific event such as Halloween and holding cooking classes.
- More formal events where people are taught new behaviours by knowledgeable staff or volunteers. Examples include facilitated sessions with project staff, and drop-in sessions where people can get help, such as cycle repair workshops.
- Support and encouragement from staff to develop personal skills and confidence, as well as knowledge about climate change and how the specific focus of the CCF project helps to tackle it. This has been done through encouraging and training of volunteers in specific areas, such as carbon literacy training.

Long-term behaviour change (**consolidation**) **occurred through establishing a habit or making a one-off decision with lasting consequences** (such as changing energy supplier). Forming a habit requires encouragement and repetition. This can generate reflection about other ways to change and influence related (or unrelated) behaviours that could contribute to addressing climate change. Examples from our case studies include:

- Making behaviour changes in energy use part of everyday routines (such as taking a shorter shower, putting less water in the kettle).
- Changing regular routines to more climate-friendly behaviours, such as commuting by bicycle instead of car.
- Making one-off or big decisions that are more climate-friendly, such as deciding to use a car club rather than having a second car.
- Extending the life cycle of products by consciously choosing to donate goods to re-use shops rather than throw them away, and to purchase second-hand rather than new items.

An example of consolidation is expressed by one interviewee as follows:

> *On a local level we have people who are coming here [to the re-use shop] now as a first point of call when they need stuff, like rather than getting new things.* (interviewee, Island case study CCF project)

The surveys conducted as part of this research found **no discernible difference in measures of pro-environmental behaviour *at the level of the whole community*** that could be attributed to the CCF projects (or to any wider societal changes for that matter). The absence of observed change at the community scale may be attributable to the gap of just one year between the surveys. It could also be attributable to the proportionally low extent of projects' reach into the whole population of their local community. The relatively small scale of the projects funded by the CCF means that it is unrealistic to expect such projects to be reaching enough people in the surveyed postcodes to result in a discernible difference at the whole community level on a metric that assesses consolidation of behaviour. This emphasises the important distinction between the community of participants (i.e. those who actually take part in project activities) and the wider community of place (the geographical target community).

These findings corroborate the insight gained through other areas of this research which highlight that the focus of impact for CCF projects with respect to behaviour lies largely in the 'lead up' to a final shift to a consolidated climate-friendly behaviour. The experiences of discovery, trial and learning are behavioural impacts likely to persist over the long term and should therefore be counted as part of a CCF project's legacy. Finding appropriate metrics to acknowledge these 'lead up' changes is important, not least because they are the building blocks for future adoption of climate-friendly behaviour and community-level impact.

Appendix E (Assessment of community-scale impact) provides further discussion of findings from the survey, including insight on attitudes towards and the emotional landscape about climate change at the community scale. Appendix F (Relative difficulty of doing different behaviours) provides an analysis of the relative difficulty of engaging in different pro-environmental behaviours and Appendix I (How did the researchers assess project impact?) offers further reflection by the research team on the use of surveys in monitoring and evaluating CCF project impact. In Appendix G (Commentary on current CCF funding criteria), we consider results from this research in the context of the four criteria for a CCF project: community, climate literacy, carbon reduction, sustainable legacy.

Key Finding: CCF projects are influencing community members at every stage of the process of behaviour change.

3.1.2 Increasing knowledge

One of the aims of CCF projects is to increase knowledge of climate change. Findings identified two kinds of knowledge in relation to climate change:

- Knowledge about climate change as an issue
- Knowledge about the links between behaviour and climate change

Impacts on knowledge was not only about climate change specifically. The case study CCF projects also raised environmental awareness more generally, as well as increasing awareness of wider social, political and ethical issues. Examples from our

case studies of how CCF projects encourage general awareness around climate change include:

- Stimulating wide-ranging conversations about environmental and climate change issues such as packaging, plastic and waste.
- Encouraging greater awareness of local environmental issues around waste and pollution.

The CCF case study projects **used active strategies** (film nights, social media posts and facilitated discussions) **as well as more passive strategies** (visual displays, leaflets or branded clothing) to raise general awareness about climate change. Examples of active and passive strategies include:

- Engagement with local schools to inform pupils about environmental impacts from the clothing industry.
- Fashion show using only clothes donated to the project.

Generally, CCF project activities include more passive activities alongside the active ones, such as having leaflets available at events, or even talking to volunteers during sessions while doing something else, such as gardening or crafting.

Promoting specific knowledge about climate change or carbon footprints relied on more active intervention by well-trained project staff or volunteers. One case study delivered messages on climate change and carbon footprints through leaflets, in annual reports and by going into local schools. All the staff in this project had attended Carbon Literacy training and they were in the process of sending their volunteers on this training as well. Other projects, who had not had this training, were less active in conveying knowledge about carbon savings and preferred to focus on local environmental benefits, such as greenspace improvements or food grown locally. The CCF project manager had this to say about the difference they felt the Carbon Literacy training had had on staff and volunteers:

> *The conversations now are a lot different. People are chatting about it in a different way, in a more confident way. Before they would maybe avoid the topic because they were – a bit like when you go to a foreign country, you don't speak the language in case they ask too much. Now they're taking the question head-on and are a wee bit more confident about it as well.* (Project Manager, workshop, City Burgh case study CCF project)

'Teaching' type interactions specifically helped people develop knowledge about the links between behaviour and climate change. Activities coordinated by project staff or experienced volunteers who can enable this kind of teaching interaction to occur through activities, such as gardening, swapping clothes or energy audits, were beneficial in raising awareness of such links. However, such activities can also provide little or no benefit if not properly coordinated or facilitated to produce conversations about climate change and behaviour.

Two groups of community members were unlikely to be affected much by CCF projects in terms of their knowledge about climate change: climate change deniers, and people with pre-existing understandings of climate change as a complex problem with economic, political and social dimensions. The case study CCF projects seemed to have **more impact on the awareness and knowledge of people with less prior knowledge**.

Key Finding: CCF Projects are increasing community members' knowledge about climate change.

The community-scale survey conducted as part of this research found that attitudes expressed by individuals in relation to climate change vary widely across a community. There was some evidence of perceived uncertainty and lack of knowledge, but by and large **most people believe that climate change is real, is happening and is caused by human activity**.

Most people who responded to the survey expressed **genuine concerns about climate change**, including worry, concern, anxiety and sadness as well as emotions such as fear, anger and guilt. Many people feel helpless and powerless in relation to climate change. Some people also expressed hope or qualified optimism.

3.1.3 Developing social norms

Our research identified that CCF projects contribute to two types of social norms: the normal thing to do (descriptive social norm) and the right thing to do (injunctive social norm). Changing "the normal thing to do/say" in a community (descriptive norms) happened through **word of mouth and imitation (of others' behaviour) and increased prominence or visibility of the CCF project**. Running multiple, diverse activities and making activities appealing reaches many (different types of) people and can make projects more successful at influencing the 'normal' thing to do within a community. Examples from our case studies include changing attitudes and behaviour around second-hand clothing and other re-used goods, changing understandings and behaviour in relation to household energy-use reductions, changing behaviour and assumptions around the necessity for a second-car in rural areas, and changing behaviour in relation to local food and food growing. Many of our case studies were involved in multiple activities that were helping to shift social norms towards more sustainable behaviours.

We found that the 'right' thing to do (injunctive social norms) within a community was intimately bound up with community members' sense of personal and group identity. This sense of identity or belonging to a certain group can act as a barrier to the diffusion of injunctive norms. When a norm is seen to apply to a particular social group, it weakens the pressure on people who do not feel part of that group. Influencing perceptions of the 'right' thing to do within a **community required both direct (e.g. facilitated group discussions) and indirect (such as leading by example) approaches**.

Key Finding: CCF projects are well-placed to change social norms in their communities.

Overall, the evidence from this research is a reminder that CCF projects do not often generate large carbon savings through wholesale community-scale shifts in behaviour. They do, however, increase knowledge and understanding about climate change, offer introductions to alternative lifestyle behavioural choices and generate opportunities for people to experience and be enveloped in a different norm, one more orientated to the relationship between one's behaviour and the planet. This suggests that the more that

CCF projects individually - and the CCF programme as a whole - can address all the elements of climate change engagement, the more effective they will be in contributing to Scotland's low-carbon transition. Treating behaviour change as a process feeds directly into "helping people to explore and adopt low-carbon behaviours". Addressing knowledge and social norms contributes to "building community capacity to embed a legacy of continued bottom-up change that can also support larger-scale policy interventions".

Recommendation 1: The CCF programme should seek to address all the elements of Climate Change Engagement.

In practice, from a CCF project team's perspective, any given activity will likely be delivering on multiple elements of climate change engagement. Similarly, a single element of climate change engagement will likely be delivered by multiple activities. Additionally, CCF projects engage their participants in multiple ways – active, formal, direct, indirect, small-scale, large-scale. It was clear that the skill and creativity of the case studies' staff teams came to the fore when choosing when each type of approach was called for and how they could be combined for effective engagement.

These observations relate to the tension that CCF projects felt about the relative merits of appealing to existing, non-climate-related motivations for exploring a new behaviour (financial, health, social) versus the attempt to influence participants' value framework to take climate change into account more explicitly. It is clear that CCF project teams use both approaches in different situations. What our findings suggest is that a trained and skilled project team[12] can decide when explicit inclusion of climate change messages is appropriate, and when a less explicit approach would engage participants better, depending on the context (see Appendix H Making the most of the CCF's community focus). This is an important answer to policymaker and stakeholder concerns about whether CCF project teams are being explicit enough about climate change messages.

4 Better capturing and reporting CCF impact

4.1 Reporting on climate change engagement

Paradoxically, the key message from this research is that to better track the CCF's contribution to Scotland's low-carbon transition, **monitoring and reporting processes need to move "beyond carbon"**.

The current emphasis on reporting carbon emissions reductions presents **several limitations**. Firstly, only consolidated changes in behaviour lead to reductions. However, focusing solely on the consolidation phase of behaviour change misses the whole range of other impacts that CCF projects have on their communities. Secondly, some activities are much easier to convert to carbon reductions than others (mileage in an electric car versus film screenings). Thirdly, community stakeholders expressed concern about the focus on carbon emissions because the high level of numeracy it requires may be a barrier for some communities.

[12] Having taken the "Carbon Literacy for Communities" training, for example, or through organisational capacity developed over time.

These issues may then **lead CCF projects to focus on easily quantifiable carbon emissions reductions** to the detriment of their other climate-related impacts that cannot be directly translated into carbon, such as increases in knowledge.

Some CCF project teams called carbon emissions reductions a **"disconnected measure"**, where the chosen indicator does not really monitor the main activities of a project. For example, composting generates very large carbon savings but has little community impact whereas skills workshops have a large impact on community behaviours and norms but no directly measurable carbon savings. Community stakeholders pointed out that carbon emissions do not really convey the full depth of change required to achieve a low-carbon society.

Key Finding: Current carbon-focused CCF monitoring and reporting processes present several limitations.

As a major result of this research, we can now suggest what "going beyond carbon" might look like. We suggest that the elements of the **Climate Change Engagement** framework provide a good basis for assessing and reporting on the CCF's non-carbon but still climate-related impacts.

The framework was examined with the Scottish case study project teams who took part in this research. **They saw value in the framework**, noting that the different elements (behaviour, knowledge, social norms) added richness to the single figure of tonnes of carbon saved and that these types of impacts might be more long term than the emissions reductions.

However, CCF project teams felt that Climate Change Engagement would be **difficult to quantify** and that a more qualitative or narrative approach to reporting may be more appropriate. They also said that **guidelines and examples would be needed**, both in terms of measuring it, but also how to achieve this type of engagement in the first place.

On the other hand, when comparing CCF projects' current reporting metrics (Carbon outcomes; Community outcomes) to the elements of the Climate Change Engagement framework, we found that projects were **already reporting relevant outcomes** that mapped onto Climate Change Engagement.

Recommendation 2: We suggest reporting along the lines of the proposed Climate Change Engagement framework.

4.2 Improving reporting processes

In addition to going "beyond carbon", this research highlights other ways in which CCF reporting processes could be improved. The community stakeholders that were interviewed noted that the **CCF reporting processes are particularly burdensome** compared to other sources of funding, partly because of the requirement to report in terms of carbon emissions reductions. It is important for any reporting framework to

account for varied objectives between projects and to allow projects with varied capabilities to report as is most appropriate.

However, the case study CCF projects involved in this research were all already monitoring their impacts in various ways, including usage statistics, surveys, observations, formal and informal feedback at events and anecdotal evidence. They relied on this to get a sense of how well they were doing. If reporting processes could be aligned more closely with the types of information that projects are collecting in the course of their work, the **reporting burden could be reduced**.

A key message from this research is that **reporting processes need to be realistic** about what can be achieved by CCF projects. The survey results show that some behaviours are more difficult to change than others, especially in terms of achieving consolidated behaviour change at the whole-community scale. It would be beneficial to consider the difficulty of the behaviours being promoted by CCF projects when judging success. Moving "beyond carbon" (and thereby "beyond consolidated behaviour change") would go some way towards addressing this issue.

A related issue is the **short reporting period**. The survey results show that expecting widespread changes in consolidated behaviours, or knowledge, is unrealistic over a one-year project, let alone quarterly reports.

Recommendation 3: Reporting processes need to be realistic.

Suggestions from this research include:

- Building a reporting framework that works towards recognising impacts on a 12-month or even multi-year timescale would be beneficial. This could help ensure CCF projects do not get disheartened by seemingly small impacts in short-term reports, while maintaining the ability to monitor progress over time to funders.
- Finding ways to record baseline data would also help. This might require additional time at the beginning of the project for collection of these types of data. Training and guidance in good survey design might also be necessary.
- Relatively small modifications such as reporting a current quarter's information next to previously reported information could help to show progress over time. This type of 'live' reporting document, where figures are entered alongside the previous reports' figures showing progress through time, might be one way to achieve this, with final analysis done annually.

4.3 Approaches for monitoring and reporting

An additional challenge faced by CCF project teams is that they only ever had a **partial perspective** – of the community, of the project, of their success. They also found it difficult not to have a benchmark or comparison against which to measure themselves. This meant they were uncertain of the impact they were really having.

Another key message from this research is that making time for reflection is beneficial for CCF projects. **Reflective workshops**, different from "business-as-usual" team meetings, have two clear advantages for project teams: making time for focused reflection and generating new ideas. However, successful reflection relies on (skilled) external facilitation. This facilitation could be provided by the "regional hubs", in a

"facilitated reporting" approach. It will be important to be clear about the purpose of the exercise – whether to support projects or audit them – as this would influence the outcome.

Surveys are a key monitoring technique, used by most of the case study CCF projects involved in this research. They can provide useful insight into a project's target community. They can capture impacts that would otherwise go unnoticed. They can also be used as an engagement tool to trigger conversations (about climate change and other environmental issues). However, surveys are burdensome for CCF projects. Surveys need to be carefully designed to ensure projects obtain the information needed while also considering participant burden in terms of survey length. Processing and analysing the responses take time and running follow-up surveys with participants to investigate change over time is particularly difficult and time-consuming. **Projects would benefit from support in designing targeted surveys to assess changes amongst participants over time**. The type of extensive survey of the whole community used in this research would mainly be useful to inform project design.

Overall, this research has highlighted the value of an **"action research" approach** to evaluating the CCF programme. Some elements of the approach used in this research, specifically site visits, reflective workshops and community stakeholder interviews, could all be directly incorporated into the ongoing CCF support function in order to ensure the continued learning and development of the CCF into the future. Any future evaluation project could also learn from the research process used in this study.

The "regional hubs" that are being suggested for the new phase of the CCF programme[13] might be able to help with the points raised above, by bringing a locally-grounded external perspective to help projects monitor and reflect on their impacts. However, the key message from the case study CCF project teams involved in this research is that it is important to **be clear about the purpose** of any engagement and to separate the supporting functions (where openness about problems is encouraged) and auditing functions (where projects feel they have to justify their grant award). For a more detailed discussion of these insights, see Appendices D (Monitoring and reporting impact) and I (How did the researchers assess project impact?).

Recommendation 4: It is important to separate supporting and auditing functions in the reporting process.

5 Making the most of the CCF's community focus

In addition to the lessons learned through this research regarding climate change engagement and how these lessons could be more fully integrated into the CCF programme, this research also drew out lessons that are related to the CCF's community focus. Notwithstanding its climate change focus, the CCF programme forms part of a wider suite of community empowerment policies, including but not limited to those within the Community Empowerment (Scotland) Act 2015.[14] As such, the CCF programme faces many of the same barriers and opportunities as other community-focused policies.

[13] See (accessed October 2020) https://www.gov.scot/policies/climate-change/climate-challenge-fund/.

[14] Scottish Government. (2015). *Community Empowerment Act (Scotland): Summary*. Available from (accessed October 2020): https://www.gov.scot/publications/community-empowerment-scotland-act-summary/.

Likewise, at the community scale, individual CCF projects are often delivered by small community-based groups that do not operate in a vacuum and must work within their community's existing organisational patchworks.[15]

Key Finding: The CCF programme faces similar issues to other community empowerment policies.

We have identified 'general success' factors that it is important to take into account simply because the CCF is a community-based policy being delivered by organisations within the community.

5.1 Community characteristics

A first issue identified through this research is that CCF projects are both constrained and enabled by their context which includes the specific characteristics of their community. This research found that CCF projects that had a knowledgeable understanding of their target community were able to design more relevant and therefore more impactful interventions. These characteristics can be summarised as the "**Where**?" (geographic features), the "**Who**?" (demographics, culture, different groups) and the "**What**?" (the most important issues) **of the community**.

An example of the 'where' characteristic comes from our island case study. This project has been able to use the community's geographic island location to generate interest in and concern for marine pollution. This has enabled itto highlight plastic pollution and to expand its activities from purely recycling and re-use to using alternatives to plastic.

An example of the 'who' characteristic comes from another case study project which designed a successful 'swapping' scheme which completely avoided the use of money. The CCF project, located in an urban area with high levels of deprivation did not want income to prevent anyone from joining. By figuring a points-based system, and designing their shops attractively, the project was able to attract people of all incomes to use its service, thereby reducing the stigma all too often associated with poverty.

An example of the 'what' characteristic comes from a case study located in a town with several diverse populations which often have different aims or expectations in relation to where they lived. This project ran many different activities, each appealing to different communities within the town. Some, but not all, of these activities brought different communities into contact with each other to understand and explore, in an informal way, the different ways in which people inhabit the town and the relationship they have with it.

As the above examples show, when CCF projects are proactive in responding to these community characteristics, they can end up looking very different. As illustrated, two of the case study CCF projects for this research both focused on waste, up-cycling and re-use yet look quite different because of the way that the projects adapted to their communities. One project used the message of reducing waste as its key contribution to tackling climate change, while the other focused on inclusion and making re-use fashionable and fun. Tailoring projects in this way requires detailed community

[15] See Dinnie, L., Msika, J., and Irvine, K.N. (2018). *Climate Challenge Fund: Organisational Networks*. ClimateXChange Community-Led Behaviour Change – Policy Note 3. Available from (accessed October 2020): https://www.climatexchange.org.uk/media/3717/community-led-behaviour-change-policy-note-3-org-networking-feb-2019.pdf.

knowledge as well as a measure of skill in project design. The ability to link community characteristics to the CCF's focus on climate change in this way is an essential skill for project teams. The community-wide surveys carried out as part of this research helped project teams to understand their community in new ways. This illustrates how collecting data about the community is a useful complement to other less structured forms of community knowledge.

The value of CCF projects is most noticeable in how they engage communities meaningfully from where the community is 'at' in relation to climate change and other societal issues. When the "tailoring" is done well, it makes the links between the global issue of climate change and the societal scale need for a low-carbon transition and local issues faced by the community. Because climate change is an issue for most people only in the most abstract sense, an important role for CCF projects is to engage people through an issue that they can relate to. The more successful projects are the ones that are able to make the link between everyday activities and climate change. Two of our case studies did this successfully by having clear messages about how their activities were linked to carbon reductions and to wider environmental changes, such as pollution. Three projects were less successful. These projects linked their activities to financial savings, integrating diverse populations and lifestyle changes in the first instance, with the link to climate change being a further and secondary consideration.

Recommendation 5: CCF projects could be given more support to respond to their community's specific characteristics.

5.2 Capacity of community organisations

The second issue relevant to the CCF's community-based delivery model is that communities and community organisations are diverse and dynamic. This research identifies some key elements that make a CCF project more successful regardless of the particular activities it is promoting. These include levels of creativity, use of volunteers, facilitating teamwork, skill of staff/coordinators, extent of partnerships, clarity of vision, organisational lifetime, and access to space.

In the case study CCF projects, these different aspects of organisational capacity were inter-related. Organisations that did well in some areas tended to do well in other areas and vice versa. While all the CCF projects were generally able to deliver the programme of activities for which they had been awarded funding, some struggled and some could have delivered more. A differentiated approach to funding that would take into account different organisation's capabilities and needs could usefully address these differences. For example, a community that has little or no experience of managing funding, employing staff or writing reports could be given a smaller grant initially to build skills and expertise before being given a full grant and being expected to carry out activities to the same level of competence as a project that has seven or eight years of organisational experience.

Additionally, there may be a place for awarding joint funding to multiple organisations within the same community, pairing newer with more established organisations. This funding approach recognises the inherently networked existence of many community groups and could offer opportunities for peer-to-peer learning. This would, however, likely require a high level of existing coordination between groups; it may also necessitate finding additional ways to encourage collaboration within communities.

Thus, while CCF projects are bespoke, designed to address the needs of their particular community, it is important to recognise that organisations, like people, also have different capacities and capabilities according to where they are in their organisational lifecycle. Recognising this, through, for example, integrating additional levels of funding between the small capacity building (i.e. grant writing) and the maximum amount available (i.e. £150,000 in the 2017-2018 funding round) could help CCF target funding more effectively and give communities realistic steps to build up their capacity.

Recommendation 6: The CCF funding approach should reflect diverse community capacities.

5.3 Wider context

The third identified issue is that all community projects exist at the interface between local issues and changes in the wider national – and international – context. During the course of this research, for example, these wider changes in public mood included the screening of "Blue Planet II" and the sudden increase in concern over single-use plastics, and Donald Trump pulling the United States of America out of the Paris Agreement.

Some of the case study CCF projects reacted to these changes in their wider context and translated them into activities that were relevant to their community; others did not. This ability to 'seize the opportunity' seemed dependent on their organisational capacity. It also depended on the degree to which projects felt empowered within their project design to be adaptive and flexible. Some case study CCF projects felt more able than others to diverge beyond the programme of activities they had written into their funding proposal.

We think that some projects were more able to adapt because of their capacity and possibly this is related to cultural understandings of public funding. By this we mean that some projects felt much more bound by their funding proposals which were very specific about the activities and numbers of participants they would include. This meant that they were working at their capacity just to deliver what they said they would (e.g. a certain number of home energy audits) and did not have the time or spare creative energy to go beyond this. Other projects which had been less specific in their proposals (e.g. we will hold public engagement events) were then able to design this around an emerging climate-related concern. Thus, to the extent possible, finding ways to build in – structurally or normatively – some degree of flexibility to project delivery at the outset would enable projects to capitalise on these potential opportunities.

Recommendation 7: The CCF could empower projects to be adaptive over the course of the funding.

6 Conclusions and recommendations

6.1 Climate Change Engagement framework

The Climate Change Engagement framework developed as part of this project is a valuable tool to understand and support the CCF's contribution to Scotland's transition to a low-carbon society. It provides a roadmap for what was previously a vaguely defined concept of "Carbon/Climate Literacy" at the intersection between the CCF's "climate-focused" and "community-focused" outcomes.

The framework views behaviour change as a process which is directly helping people to explore and adopt low-carbon behaviours. The inclusion of knowledge and social norms as components of climate change engagement highlights the CCF's contribution to building community capacity to embed a legacy of continued bottom-up change that can also support larger-scale policy interventions.

Overall, this represents a significant step forward in recognising CCF project success and the CCF programme's unique policy role at the intersection of climate change action and community empowerment.

6.2 CCF project impacts

This research has drawn attention to the many different ways CCF projects influence the uptake of new low-carbon behaviours, knowledge and social norms. As we have shown, these processes are complex. Recognising and understanding these many small, not necessarily carbon-based, changes is important not least because they are arguably the building blocks for future community-level impact.

Behaviour change is a dynamic process in which CCF projects play an active role. Consolidating a climate-friendly behaviour is a component of behaviour change at which long-term carbon savings are locked in. Such consolidation builds on the interplay of discovery, interest, trial and learning. While behaviour may become consolidated during the lifetime of a CCF project, our research shows that often it does not. Thus focusing solely on whether behaviours are consolidated or not misses the full extent of CCF projects' impacts on participants' behaviours.

Impacts on participants' knowledge goes beyond climate change; their knowledge gain covers environmental issues more broadly. Climate-specific knowledge impacts are a small part of CCF projects' total environmental education successes. Descriptive social norms spread "virally" along a community's social networks through word of mouth and imitation. Presence or absence of infrastructure has a large effect on the normalisation of specific behaviours.

Our evidence shows that injunctive social norms change through close engagement between people and organisations over time. The findings also highlight social group identity as a key enabler and barrier for changing injunctive social norms. When a norm is seen to apply to a particular social group, the degree to which someone considers themselves to be part of that group can strengthen or weaken the pressure.

A common concern among policy makers and stakeholders was that people were participating in CCF projects and engaging in climate-friendly behaviours without necessarily being aware of or understanding the climate messaging behind it. In fact, this was one of the starting points for this evaluation.

However, our research shows that climate messages can be quite abstract and technical for most people, whereas ideas around generally respecting the environment and being

less wasteful (also examples of injunctive social norms) were more readily understood. This suggests that, in some cases at least, re-framing the nature of the challenge might result in wider engagement. There is also the possibility that strengthening social norms, such that particular behaviours are simply seen as the normal or the right thing to do in that community, might be more productive than encouraging people to continuously think through the carbon impacts of their everyday lives.

We found a key dilemma for CCF projects: creating a tight-knit, supportive social environment for existing project participants to explore new behaviours and norms can lead to deep changes for them but it can come at the expense of reaching only a small subset of people in the community. Achieving depth and breadth of engagement simultaneously is difficult. There are important lessons here for future projects.

6.3 CCF project design

This research identified a series of lessons that can improve the ways in which CCF projects engage their communities in climate change. Examples from our case studies include:

- Making themselves and their activities visible and known in the community.
- Running a diverse programme of activities and/or making their activities as widely appealing as possible.
- Appealing to a range of different motivations for engaging in their behaviours.
- Creating safe, fun and interesting environments where people could enjoy trying new behaviours and discussing new ideas.
- Training project staff and volunteers so that they were confident communicating about climate change in a variety of ways.
- Leading by example.

Project teams were engaging their participants in a range of ways. Sometimes they ran active, formal engagements, specifically designed to directly address participants' knowledge or behaviour. Yet, they also engaged with participants in passive, informal ways, where their influence was more indirect. It was clear that the skill and creativity of the case studies' staff teams came to the fore when choosing when each type of approach was called for and how they could be combined for effective engagement.

This relates to the tension that project teams felt about the relative merits of appealing to existing, non-climate-related motivations for exploring a new behaviour (financial, health, social) versus the attempt to influence participants' value framework to take climate change into account more explicitly. It is clear that project teams used both approaches in different situations. What our findings suggest is that a trained and skilled project team[16] can decide when explicit (active/formal/direct) inclusion of climate change messages is appropriate, and when a less explicit (passive/informal/indirect) approach would engage participants better, depending on the context. This is an important answer to policymaker and stakeholder concerns about whether CCF project teams are being explicit enough about climate change messages.

[16] Having taken the "Carbon Literacy for Communities" training, for example.

6.4 Monitoring and reporting CCF impact

We identified particular tensions around the purpose of reporting. A supportive context where openness about problems is encouraged can lead to them being resolved. Conversely, a context where projects feel judged on the content of their reports, can lead to a more cautious and defensive approach to reporting. Resolving, or at least addressing, this tension in the reporting process would be an improvement, regardless of the actual content of the reports.

An open question raised by this research is how projects might report on Climate Change Engagement. This research has demonstrated that measuring CCF projects' impacts and outcomes directly in the community (through surveys for example) is time-consuming for a CCF project team also trying to deliver the project.[17] An alternative approach might be for projects to report on the activities they have run and to reflect on whether their programme has addressed each of the elements of Climate Change Engagement, providing supporting evidence of impact as available. This might make best use of information that project teams already have and collect but it would require training in order to ensure that a "reflective practice" approach delivers best value, and for consistency across projects.

The role of the "regional hubs" that are being suggested for the new phase of the CCF was still under discussion at the time of writing. They may be able to help with the points raised above, by bringing a locally grounded external perspective to help projects better monitor and report on their impacts.

6.5 Assessment of community-scale impact

We found no discernible impact at the scale of the whole community in practised behaviours or attitudes toward climate change at the population level in the survey results. This has four possible reasons:

- The short timescale over which this research was carried out did not give participants much time to make changes.
- The relatively small scale of the projects funded by the CCF means that it is unrealistic to expect such projects to be reaching enough people in the surveyed postcodes to result in a discernible difference at the whole community level. This emphasises the important distinction between the community of participants (the people engaged by a CCF project) and the wider community of place (the geographical target community).
- People started from a relatively high baseline of climate-friendly attitudes.
- The relatively small response from the sampled population.

Further complexity is evident in the findings on attitudes to and emotions about climate change. The survey identified a high level of climate-friendly attitudes among the participants, in that they understand that climate change is a real problem. Additionally, participants expressed great strength of feeling, usually negative, about climate change. It was also evident that some people feel powerless in terms of their ability to make a difference in the face of a global issue. For these people, knowledge and understanding of climate change may not necessarily lead on to taking up new behaviours or the spreading of social norms. Empowering people who are overwhelmed by the scale of

[17] The resource intensiveness of assessing CCF project impacts is discussed from the researcher's perspective in Appendix I (How did the researchers assess project impact?).

the climate crisis to engage meaningfully in climate-friendly behaviours will be a key challenge for CCF projects in the future.

Overall, our survey results suggest the ten key behaviour areas identified in 2013 by the Scottish Government remain relevant. Saving electricity (point 3), efficient driving (point 6) and waste (point 10) could be updated in their level of ambition. The other points remain a challenge, particularly point 5 on reducing car reliance and point 8 on reducing food waste.

For the CCF, this analysis shows that there are some "easy wins" in each domain of activity: promoting seasonal diets (food), promoting recycling (waste), promoting efficient driving (transport) and reducing home electricity use (energy). Equally, there are also behaviours that are harder to tackle: reducing car dependency (transport), reducing food waste (food), improving domestic heating (energy) and promoting reuse and repair (waste).

6.6 Commentary on current CCF funding criteria - Sustainable legacy

Treating behaviour change as a process, as is suggested in our Climate Change Engagement framework, has implications for how we understand the legacy of CCF projects. Examining each element of the behaviour change process provides some insight into whether the impacts are something that might persist beyond the end of the project:

- Once someone discovers a new behaviour and becomes aware of it (in their community) for the first time, they are unlikely to forget it again.
- Someone's interest in a particular behaviour may wax and wane, so this is less of a legacy impact.
- Once someone has a good experience trying a behaviour for the first time, the positive association is unlikely to be lost.
- Once someone acquires the skills and learning that are associated with a particular behaviour, they are unlikely to forget them ("it's like riding a bike, you never forget!")
- Consolidation is long term by definition.

Thus discovery, trial and learning are behavioural impacts likely to persist over the long term and should therefore be counted as part of a CCF project's legacy in addition to any consolidated behaviour changes achieved during the course of the funding.

It is difficult to comment on the longevity of changes in knowledge, based on the data that we have collected. However, it is likely the changes we have identified, particularly the more general increases in environmental awareness, persist beyond the end of a CCF project.

Our work on social norms, on the other hand, suggests that these are also a key part of CCF projects' legacy. Our case studies were able to have impacts on both descriptive social norms ("what's normal") and injunctive social norms ("what's right"). The changes to injunctive social norms are particularly likely to persist into the future as they are deep seated and generally require sustained intervention to change them in the first place.

6.7 Making the most of the CCF's community focus

We largely encountered the same issues and opportunities for CCF as other community empowerment policies.

Firstly, CCF projects are both constrained and enabled by the specific characteristics of their community. Where CCF projects are proactive in responding to these community characteristics, they can end up looking very different, even if their domain of activity (transport, waste, food, energy) is the same. These characteristics can be summarised as the "Where?" (geographic features), the "Who?" (demographics, culture, different groups) and the "What?" (the most important issues) of the community.

Secondly, this research identifies some key organisational characteristics that make a CCF project more successful regardless of the particular activities it is promoting. These include levels of creativity, use of volunteers, facilitating teamwork, skill of staff/coordinators, extent of partnerships, clarity of vision, organisational lifetime and access to spaces(s). These different aspects of organisational capacity were inter-related. Organisations that did well in some areas tended to do well in other areas and vice versa.

Thirdly, all community projects are affected, to a greater or lesser extent, by local issues and changes in the wider national and international context. Some of the case study projects reacted to such changes and translated them into activities that were relevant to their community; others did not. This depended on their organisational capacity (see above). It also depended on the degree to which projects felt empowered within their project design to be adaptive and flexible.

A significant reflection from this section is that running a successful CCF project is not just about deploying a programme of activities designed to encourage community engagement with climate change. It also includes a range of more general factors that influence success, at the community level, at the organisational level and at wider scales. If the sole purpose of the CCF is to tackle climate change, these more general success factors for community projects could be treated as subsidiary to the factors influencing the success of particular activities. However, the CCF has always been accompanied by a policy narrative of community empowerment.[18] If community-based projects are seen as 'niche innovations' as some literature suggests[19] then 'success' should be evaluated subjectively and not necessarily be only about fulfilling project outcomes defined at the outset. More specifically, for many community projects, success is understood as being just as much about survival and persistence over time, about deepening and strengthening social relations, and about inspiring others and being part of a wider process of societal change, as it is about achieving stated aims around narrow definitions relating to tackling climate change.[20, 21] These reflections are not unique to the CCF and apply equally to other community-based policies, but that makes

[18] Revell, P. & Dinnie, E. (2018). Community resilience and narratives of community empowerment in Scotland. *Community Development Journal,* 55(2): 218-236.

[19] Geels, F. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case study. *Research Policy,* 31: 1257–1274.

[20] Celata, F. & Sanna, V. S. (2019). A multi-dimensional assessment of the environmental and socioeconomic performance of community-based sustainability initiatives in Europe. *Regional Environmental Change,* 19**:** 939-952.

[21] Feola, G. & Nunes, R. (2014). Success and failure of grassroots innovations for addressing climate change: The case of the Transition Movement. *Global Environmental Change,* 24: 232-250.

them no less important to take into account in the further development of the CCF as a programme.

Appendix A Climate Change Engagement framework

A.1 Climate Change Engagement framework

The key aim for this research project was to assess the Climate Challenge Fund's (CCF) influence in terms of contribution to Scotland's transition to a low-carbon society. Previous reviews of the CCF had found that carbon emissions reductions did not adequately capture the CCF's contribution and suggested "*that other ways to measure success for a community-based climate change project may need to be developed, alongside carbon*."[22]

The first priority was therefore to develop a framework that could structure the data collection process. This led us to identify the key concept of "Climate Change Engagement" and the three elements of "behaviour", "knowledge" and "social norms". These elements were further refined and specified as we analysed our research findings, leading to the final version of the framework.

A.2 Overview

The Climate Change Engagement ramework provides a structure for understanding how CCF projects can engage people with climate change within a community context. Such engagement is necessary for making a transition to a low-carbon society. The framework specifically considers the way people (individually and as a community) relate to the issue of climate change through their behaviours, knowledge and social norms.

Engaging people in climate change can occur in three ways: encouraging the adoption of climate-friendly **behaviours**, increasing **knowledge** of climate change and influencing **social norms** relating to climate change. Figure 1 provides an illustrative overview of the framework.

[22] Hilliam, A., Moir, S., Scott, L., Clark, T., Smith, I., & Changeworks. (2015). *Review of The Climate Challenge Fund* [Report]. p. 47. Retrieved from Scottish Government Social Research website (accessed October 2020): http://www.scotland.gov.uk/Publications/2011/06/28142748/0.

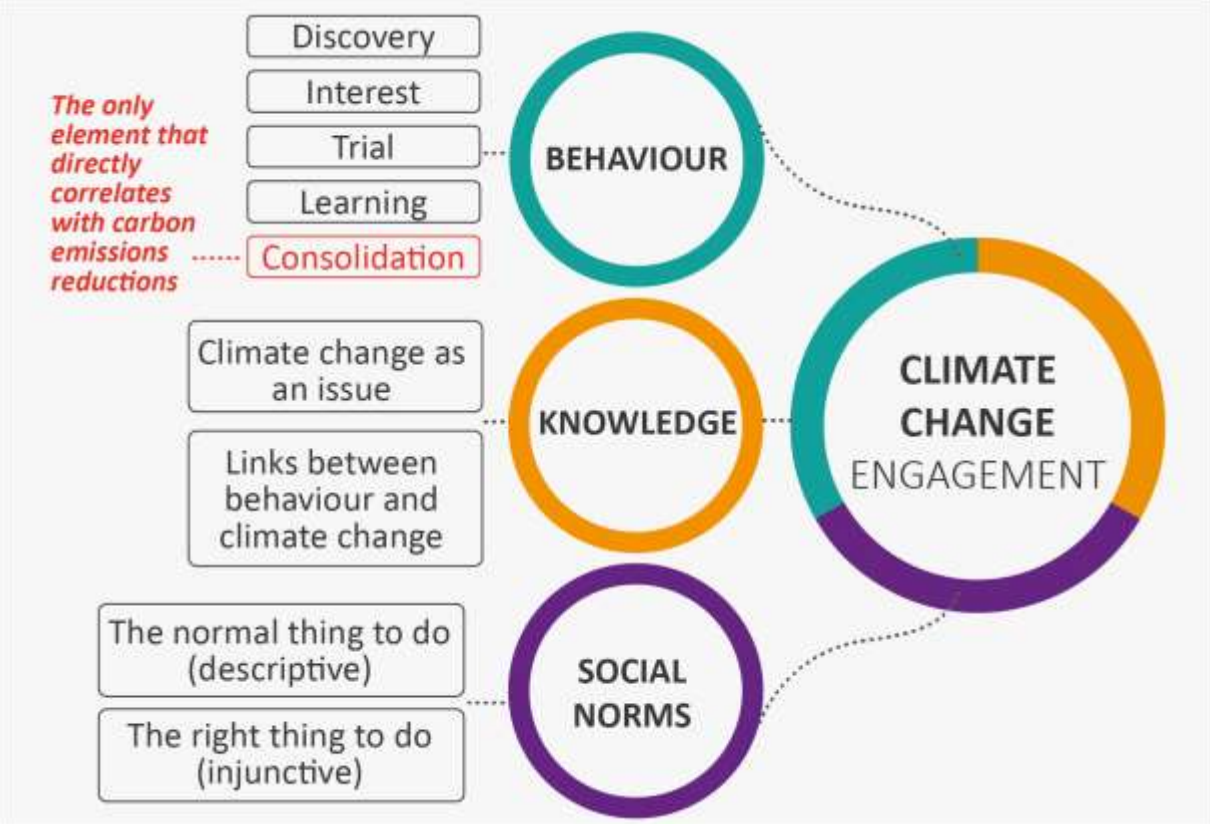

Figure 1 : Climate Change Engagement framework illustrating the three core elements - Behaviour, Knowledge, Social Norms - and their individual components

A.3 Behaviour element

Our data collection and analysis illustrate that in the context of the CCF community-based projects, the adoption of climate-friendly behaviours is a process, not a one-off event, which includes several components (see Figure 2).

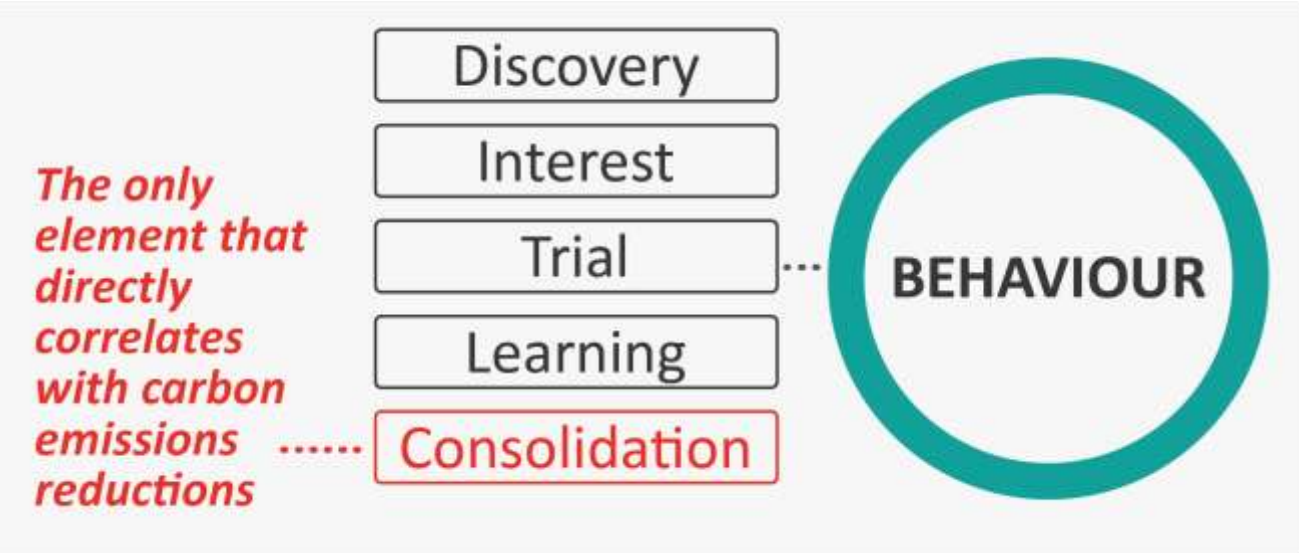

Figure 2 : Components of behaviour in the Climate Change Engagement framework

While there is a direction of travel implied in this conceptualisation (you probably need to have discovered a behaviour before you can try it, for example), these different

components of behaviour should not necessarily be seen as linear. The process is just as likely to move between the different components or have significant pauses before a climate-friendly behaviour becomes embedded. For example, someone might try cycling but not be able to cycle regularly until they get a bicycle, acquire the skills and confidence necessary to cycle on the road, and get the time to embed it into their daily life or routines. This may help to explain in part why adoption of climate-friendly behaviour is so difficult to achieve; there are many points at which it can be paused or side-tracked. This problem is not specific to climate-friendly behaviour but is true of behaviour change more generally.[23]

Significant carbon emissions reductions are unlikely to accrue until the "consolidation" component. Yet focusing solely on consolidated behaviours (because they are the only ones that substantively reduce carbon emissions) understates CCF projects' influence on the process of changing behaviours in their community. There are many factors beyond the control of individual CCF projects that can prevent long-term consolidation. This is why our Behaviour element in the Climate Change Engagement framework draws attention to discovery, interest, trial and learning as the CCF's key contributions in the shift towards low-carbon lifestyles.

A.3.1 Discovery

People become aware of climate-friendly behaviours' existence (in their community).

Discovery appears to be a basic pre-requisite for adopting a new behaviour. Someone cannot become interested, try or learn about a behaviour of which they are not aware. In the context of the CCF, projects allow people to discover a behaviour that is practised in their community, by people they know or in a familiar location. We suggest that this is different to the more general process of discovering a behaviour through mass media, social media or travel to a different location where behavioural patterns differ (e.g. seeing people cycling in the Netherlands).

A.3.2 Interest

People become motivated to enact a new behaviour.

Related to discovery yet with distinct practical and conceptual differences is the 'interest' component. This can be described as moving from having discovered the possibility of change to wanting or being motivated to do something. It suggests that there is a period of time during which one becomes more cognitively and emotionally engaged. The interest component could thus be described as a pivotal step in moving from discovery to trial, another component in the behaviour change process. It may be a quick step, or it can take more time to work through before people feel interested enough to trial a new behaviour. The triggers for increased interest can be cognitive, where people recognise the environmental, health or financial benefits of a behaviour. They can also be social, where people see their family or friends doing something, or emotional, where people simply become curious about something new.

A.3.3 Trial

People try a new behaviour (for the first time).

[23] For example, the Transtheoretical Model of Behaviour Change used in health (see [accessed October 2020]: https://www.prochange.com/transtheoretical-model-of-behavior-change?highlight=transtheoreticl%20model) and insights from psychology that have informed behavioural economics or 'nudge theory' (Whitehead et al., 2018). Whitehead, M., Jones, R., Lilley, R., Pykett, J. & Howell, R. A. (2018). *Neuroliberalism: Behavioural Government in the Twenty-first Century*, Oxford, Routledge.

A third component within the behaviour change process is actually trying out (enacting) the new behaviour. This part is experimental, before people are ready to fully commit. It is also an embodied experience and therefore involves experiencing what the behaviour feels like and what emotions accompany it. In the case of some behaviours (e.g. cycling) that require particular skills, trialling a behaviour may occur repeatedly as people continuously learn skills and try them out (e.g. balancing and pedalling, braking, cycling in traffic, cycling in the rain). Every time someone tries something new, the emotions and physical sensations accompanying that experience are an important consideration as these feelings can encourage or discourage whether someone continues their exploration of altering existing or adopting new behaviours in relation to climate change.

A.3.4 Learning

People learn how to do a behaviour; this may involve acquiring necessary skills.

The learning component of behaviour change involves gaining the skills and learning how to do something. It involves becoming more accomplished at the new behaviour, acquiring the dexterity and bodily skills to do something (e.g. sewing skills or driving an electric car) as well as the cognitive capacity to think about that behaviour in detail (e.g. judging the difficulty of a particular up-cycling project or knowing how and when to charge an electric car). This know-how may be acquired on the basis of lived experience, or through sharing the experience of others.[24] As a more conscious component of the behaviour change process, learning may also be accompanied by an explicit realisation that one is doing things differently, such as putting less water in the kettle in order to reduce electricity consumption.

A.3.5 Consolidation

People form habits or make long-term decisions to engage in new behaviours.

In our conceptualisation of behaviour change we understand consolidation to occur in two ways: either by turning a newly trialled behaviour into a habit through repetition, or by making a one-off decision with long-term consequences (e.g. changing energy tariff or not replacing a second car). These two types of consolidation have different implications. One-off decisions occur infrequently and are generally difficult to reverse. Habit-forming requires constant repetition and therefore is more susceptible to gradual change.

A.4 Knowledge element

Knowledge about climate change is the second element of our Climate Change Engagement framework. We have identified two distinct types of knowledge about climate change:

- climate change as an issue; and
- the links between behaviour and climate change.

Figure 3 provides a reminder of the knowledge element within our Climate Change Engagement framework including these two different components of knowledge.

With regard to the first type of knowledge, this means that people become aware of climate change. Over the course of our research, it became clear that our case studies have not only affected community members' knowledge about climate change

[24] For research on the use of 'stories' as a way to learn about new issues or new ways of doing see for example: Bardwell, L. (1991). Success stories: Imagery by example. *The Journal of Environmental Education*, *23*(1): 5-10; and De Young, R., & Monroe, M. C. (1996). Some fundamentals of engaging stories. *Environmental Education Research*, 2(2), 171-187.

specifically, but have also increased their knowledge of environmental issues more widely. Thus, at the most basic level, an increased awareness of climate change as an issue may manifest as an increased awareness of environmental issues in general.

In some cases, we found evidence of people just becoming more 'tuned in' to social, ethical or political issues more generally. For people who already had a detailed understanding of the global challenge presented by climate change they often already framed it in political, economic or sociological terms.

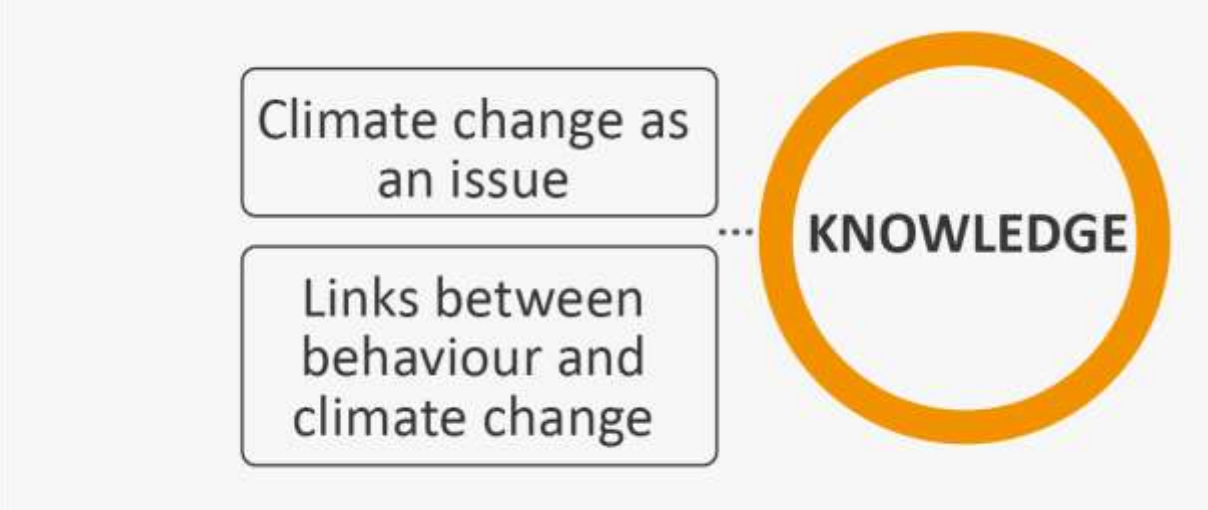

Figure 3: The different types of knowledge that might be affected by Climate Challenge Fund projects

In terms of the second type of knowledge, this means that people build an awareness and understanding of the climate impacts of their behaviours. Again, our evidence suggests that, at the most basic level, people do this in terms of the impact of their behaviours on the environment more broadly. When developing an understanding and knowledge about linkages between behaviour and climate change, some people were able to think through the relative energy costs and associated carbon footprints of different behaviours, not necessarily limited to those focused on by the particular CCF project. This 'behavioural link' type of knowledge may translate into a motivation to change behaviour.

Changes in these two different types of knowledge are an important contribution of CCF projects because such changes can last far longer than the one- to three-year timescale of a project's specific activities. Increasing community members' knowledge about climate change and how their behaviour impacts on it increases peoples' capacity to make climate-friendly changes to their lives. It can also increase democratic support for larger-scale climate-focused policy interventions. Additionally, here we see the possibility of knowledge translating directly to action which adds important critique to the widely held assumption that knowledge influences attitudes which then influences behaviour,[25] or that there is at least a positive correlation.[26]

[25] This causal model has been subject to extensive critique. See e.g. Engels, A. (2019). "How should we ask questions about the social status of climate change knowledge?" *Wiley Interdisciplinary Reviews: Climate Change*, John Wiley & Sons, vol. 10(4): e584. Available from (accessed October 2020): https://onlinelibrary.wiley.com/doi/full/10.1002/wcc.584 or Shove, E. (2010). Beyond the ABC: Climate Change Policy and Theories of Social Change. *Environment and Planning A* 42(6): 1273-1285.

[26] This is supported by our own survey findings presented in Appendix E (Assessment of community-scale impact) as well as in the academic literature, e.g. Klöckner, C. A. (2013). A comprehensive

A.5 Social norms element

The social norms element of our Climate Change Engagement framework moves beyond isolated, individual changes in behaviour and recognises the social aspect of the CCF. We identify the two types of social norms commonly described in the literature: those that are about the 'normal' thing to do' (i.e. descriptive social norms) and those that are about the 'right' thing to do (i.e. injunctive social norms) (see Figure 4).

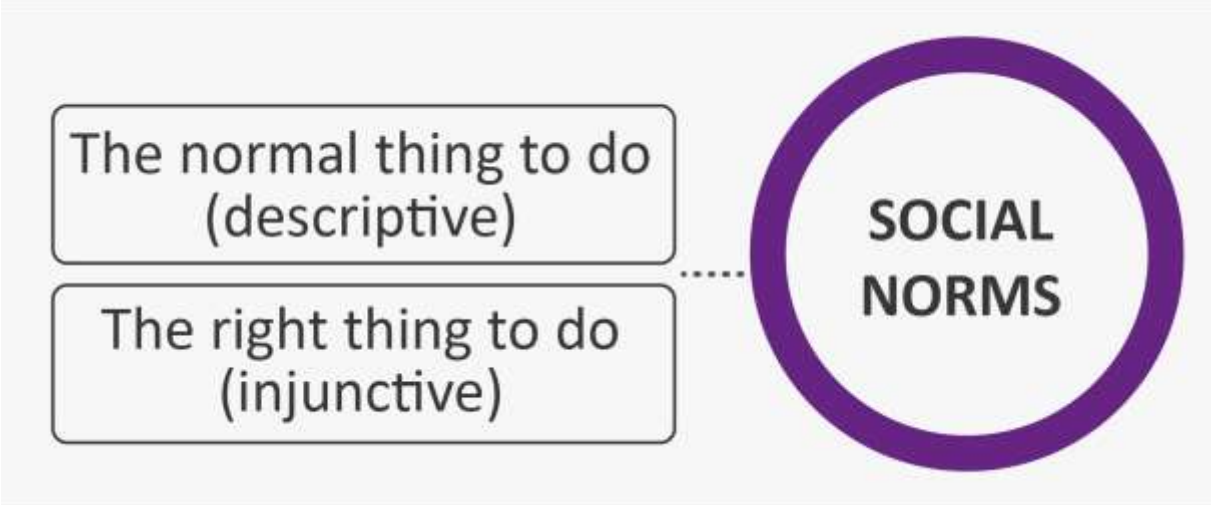

Figure 4: Two different types of social norms on which CCF projects might have an impact

Social norms are important because they create cultural and social-structural frameworks which influence people's behaviour.[27] Examples of cultural frameworks could include, for example, expectations and rituals around food in which meat eating is the norm at every meal, or cultural assumptions around indoor thermal comfort. Examples of social-structural frameworks include, for example, the institutionalisation of ideas and assumptions around family, religion and marriage. Shifts in social norms share a similarity with changes in knowledge in that they also can increase community capacity to continue making climate-friendly changes into the future.

A.5.1 Descriptive social norms

When a large number of people behave in a certain way or hold particular ideas, this constitutes a descriptive social norm. One of the aims of the CCF is to normalise low-carbon behaviours within communities in areas such as home energy use; reducing, recycling, reusing waste; active and sustainable transport; and food growing and reducing food waste. By creating opportunities to try new behaviours in these areas, CCF projects provide accessible ways for people to change everyday behaviours. Over time these new behaviours (such as growing your own food, or swapping clothes you no longer wear) are taken up by more people until they constitute a new norm. If enough people adopted these new, low-carbon norms this would help to bring about the transition to a low-carbon society.[28]

model of the psychology of environmental behaviour—A meta-analysis. *Global Environmental Change,* 23(5): 1028-1038. doi:http://dx.doi.org/10.1016/j.gloenvcha.2013.05.014.

[27] Shove, E., Pantzar, M. & Watson, M. (2012). *The Dynamics of Social Practice: Everyday life and how it Changes,* London, Sage.

[28] Martellozzo, F., Landholm, D. M. & Holsten, A. (2019). Upscaling from the grassroots: potential aggregate carbon reduction from community-based initiatives in Europe. *Regional Environmental Change*. 19: 953–966.

Lack of infrastructure (e.g. cycle lanes) can be a barrier to widespread adoption of behaviour. However, a CCF project might increase the number of people who, in this example:

- Have discovered the possibility of cycling
- Are interested in cycling
- Have tried cycling
- Have the skills to cycle
- Understand the links between cycling, carbon emissions and climate change

We suggest that this can still constitute a shift in a descriptive social norm, even if the number of people regularly cycling in this example has not increased. Ignoring this kind of shift misses a significant part of CCF projects' contributions towards addressing climate change.

A.5.2 Injunctive social norms

Injunctive social norms differ from descriptive social norms in that they are based on a shared set of values around the 'right thing to do'. Such norms exert a social pressure on people to, in this case, care about the environment and adopt more climate-friendly behaviours. In contrast to descriptive social norms, injunctive social norms do not actually have to be acted upon in order to exist. This means that when many people are aware of the right thing to do but do not necessarily do it, this still constitutes an injunctive social norm. In addition, the strength of injunctive social norms is unrelated to the number of people acting on them. They are strongly related to feelings of individual and group identity – and so, community identity.

A.6 Other related frameworks

There are a number of other frameworks for thinking about behaviours and climate change. During the co-design phase of this research (see Appendix K Research approach), we reviewed the relevance of these and considered how they might inform our work. In this section we briefly describe how our Climate Change Engagement framework builds on language and concepts used within the CCF programme ("Climate Literacy" and "Carbon Literacy") and complements the Scottish Government's ISM Model of Behaviour Change[29], an existing model for behaviour change used by Scottish Government policy teams.

A.6.1 "Climate Literacy" and "Carbon Literacy"

Two existing phrases, often used interchangeably, are used in discussion about the CCF programme – "Climate Literacy" and "Carbon Literacy". The concept of Climate Literacy is one of the CCF project evaluation criteria[30] and "Carbon Literacy for Communities" training was offered to CCF project teams around Scotland during the 2017-2018 funding cycle when this research project commenced.

[29] Darnton, A. & Evans, D. (2013). *Influencing behaviours: A technical guide to the ISM Tool*. Scottish Government Social Research. Available from (accessed December 2019): https://www.gov.scot/publications/influencing-behaviours-technical-guide-ism-tool/ .

[30] Specifically: (i) the Carbon Reduction criterion emphasised the need to improve carbon literacy; and (ii) a new criterion introduced in 2016, entitled Climate Literacy, emphasised the need to increase understanding of climate change. See Appendix G (Commentary on current CCF funding criteria) for specific comments on the current CCF funding criteria drawn from empirical details of this research.

Both concepts emphasise knowledge, understanding, communication, and informed decision making. There are geographical considerations – 'climate literacy' appears to be the preferred term within the United States (US) while 'carbon literacy' is more common on United Kingdom (UK) websources/sites. For example, The Climate Literacy Network,[31] a US-based network of organisations, focuses on development of educational materials for schools with the aim of developing climate literate individuals who:

- understand the essential principles of Earth's climate system,
- know how to assess scientifically credible information about climate,
- communicate about climate and climate change in a meaningful way, and
- are able to make informed and responsible decisions with regard to actions that may affect climate.

Within the UK, the Carbon Literacy Project[32] gained prominence when it informed a climate change action plan for Manchester. Here, Carbon Literacy was defined as: "an awareness of the carbon costs and impacts of everyday activities and the ability and motivation to reduce emissions, on an individual, community and organisational basis". The Carbon Literacy project offers a training programme which served as the basis for the training being offered to CCF project teams.

Underlying both concepts (climate and carbon literacy) is the idea of developing a 'literate' or informed individual. An individual might be described as 'literate' when they are knowledgeable about climate change. Additionally, they would understand the linkages between behaviour and climate change. There is an underlying assumption that once 'literate', an individual will communicate about these with others and make decisions to engage in behaviour that reduces impact on the climate.

The Climate Change Engagement framework that we have developed builds on these concepts in three ways:

1. We separated out and made explicit the **behaviours** aspect and the **knowledge** aspect of Climate/Carbon literacy. We also gave them equal importance to recognise the debates around whether people need to have knowledge before they can act.
2. We added the **social norms** aspect to recognise that behaviours and knowledge can be collective and have a social dimension. This is particularly important in the context of the CCF, as an explicitly community-focused policy.
3. We realised that the breadth of concepts we were examining was no longer adequately captured by the idea of literacy[33] and therefore decided to use the terms engagement with climate change instead, or **climate change engagement**.

Our Climate Change Engagement framework in this context is thus an evolution of the Climate and Carbon Literacy concepts (which are used interchangeably), developed in order to be more appropriate and accurate for studying the ways CCF projects engage people in climate change. The further development of the behaviour, knowledge and

[31] See (accessed December 2019): https://cleanet.org/cln/index.html.

[32] See (accessed December 2019): http://www.carbonliteracy.com.

[33] Within the non-specialised literature, this word is often associated with the ability to read and write; Within the climate change arena, it appears to emphasise not only knowledge but also action; it does not encompass the notion of wider community engagement which is central to the CCF programme.

social norms elements occurred through the process of data analysis and led to the detailed framework laid out above.

A.6.2 The ISM Model of Behaviour Change

The Scottish Government has long been interested in gaining a better understanding of low-carbon behaviour change. Various tools and reports have been developed,[34] including the ISM Model of Behaviour Change.[35] This model, developed specifically for the Scottish Government, is used as a practical tool for understanding the contexts – individual, social, material – that can impact on behaviour with an aim to help policymakers and practitioners develop strategies and interventions for influencing and facilitating behaviour change. The ISM Model of Behaviour Change is one tool designed to support organisations, local authorities and policymakers in developing and monitoring initiatives on climate change. In particular, the Scottish Government produced a guide for designing sustainability projects entitled '*Shifting Normal*'[36] which builds on the ISM Model of Behaviour Change by encouraging users to consider the individual, social, material and societal contexts of sustainability-related challenges and project ideas.

As outlined above, the framing for this research project is originally based on the Climate/Carbon Literacy concepts, rather than the ISM Model of Behaviour Change. The ISM model was developed based on a review of the scientific literature. By contrast, the Climate Change Engagement framework was developed initially in collaboration with policy teams. This co-production approach sought to clarify the intended policy outcomes for the CCF, drawing on the scientific literature to clarify the concepts and terminology being used by the CCF policy teams.

Here, we briefly outline the main relationships between the ISM Model of Behaviour Change and our Climate Change Engagement framework and reflect on what the two could learn from each other.

Behaviour: The ISM model is specifically focused on behaviour (especially what we in our framework call "consolidated behaviours") and examines the factors that may influence it. In the ISM model, behaviour change is the end goal, with the "individual", "social" and "material" contexts serving as precursors to, or predictors of, that change. Our Climate Change Engagement framework also considers behaviour, but as one of three ways in which CCF projects can engage people in climate change. In addition, our framework focuses more on the processes by and through which people adopt new behaviour and provides a structure for understanding how the various factors identified by the ISM model might interact.

Knowledge: The ISM model only includes knowledge as one aspect of the "Individual"-scale factors that might ultimately influence behaviour. However, in the context of the

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[34] Southerton, D., McMeekin, A., & Evans, D. (2011). *International Review of Behaviour Change Initiatives: Climate Change Behaviours Research Programme*. Scottish Government Social Research. Available from (accessed December 2019): https://www2.gov.scot/Resource/Doc/340440/0112767.pdf.

[35] Darnton, A. & Evans, D. (2013). *Influencing behaviours: A technical guide to the ISM Tool*. Scottish Government Social Research. Available from (accessed December 2019): https://www.gov.scot/publications/influencing-behaviours-technical-guide-ism-tool/. Southerton, et al., (2011), op. cit.

[36] Lancaster, O., Candea, P., & Goodsir, S. (2015). *Shifting Normal: How to design projects that change things for the better* (Online Guide). Scottish Government. Available from (accessed December 2019): https://www.gov.scot/publications/shifting-normal-design-projects-change-things-better/.

CCF programme, increases in community members' knowledge about climate change are valuable as an end in themselves, because of their potential to influence changes at greater scales (e.g. national level, longer term) than the particular project's time and space horizon. Our Climate Change Engagement framework reflects this and identifies the two distinct types of climate-related knowledge that are relevant.

Social Norms: The ISM model explicitly includes a "Social" aspect but also treats it as a precursor of behaviour. By contrast, the Climate Change Engagement framework again emphasises the need to consider changes in social norms as an end goal of CCF projects, as the effects of these norms on behaviour operate at spatial and temporal scales well beyond the horizon of a funded project. This ability to begin to alter social norms is an important 'legacy' of a CCF project, i.e. although the project may no longer exist, any change in social norms can carry forward the development of a low-carbon community.

Material: The "Material" element from the ISM model is not included explicitly in our Climate Change Engagement framework. Our research was specifically focused on examining CCF projects' effects on *people* rather than material change in infrastructure, technologies, regulations or timetables. Projects' impacts on 'materials', or other over-arching structures, were not interesting to us *per se*. They were relevant to our research to the extent that they influenced changes to behaviours, knowledge or social norms in the community, i.e. at the individual and social level.[37] It is also important to note that the CCF's current short-term funding model means that CCF projects are not well-placed to make long-term changes to material infrastructures.

We consider that our framework builds on the ISM model while making it more specific to the CCF and potentially to community-based initiatives more broadly. We identify the range of impacts that could reasonably be expected from CCF projects and the programme as a whole. However, we also add new insights that were not covered by the work that went into developing the ISM model, specifically: the *processes* people go through when adopting new low-carbon behaviours, the different types of knowledge that people can hold about climate change and the different types of social norms that people are exposed to around climate change.

[37] We also note that access to and control over a physical space is an important over-arching success factor for community organisations, including CCF projects. See Appendix H (Making the most of the CCF's community focus), specifically Section H.2.8 "Access and control over space(s)".

A.7 Climate Change Engagement framework definitions

Table 1: Definitions of the components within the three core elements – Behaviours, Knowledge, Social Norms – of the Climate Change Engagement framework

Element	Definition
Climate Change Engagement	The way people (individually and as a community) relate to the issue of climate change through their behaviours, knowledge and social norms.
Behaviours	
Discovery	People become aware of climate-friendly behaviours' existence (in their community).
Interest	People become motivated to enact a new behaviour.
Trial	People try a new behaviour (for the first time).
Learning	People learn how to do a behaviour; this may involve acquiring necessary skills-based knowledge.
Consolidation	People form habits or make long-term decisions to engage in new behaviours.
Knowledge	
Climate change as an issue	People are aware of climate change. At the most basic level this may manifest as an increased awareness of environmental issues in general. Some people will have a detailed understanding of the global challenge presented by climate change and may frame it in political, economic or sociological terms.
Links between behaviour and climate change	People are aware of the climate impacts of their behaviours. At the most basic level, people are aware that their behaviours have environmental impacts. Some people might be able to think through the relative energy costs and associated carbon footprints of different behaviours, not necessarily limited to those focused on by the particular CCF project. This knowledge may translate into a motivation to change behaviour (see "Interest" component under behaviours).
Social norms	
Descriptive social norms: "the normal thing to do"	Norms created within a community because a large number of people are behaving in a certain way or engaging in particular activities.
Injunctive social norms: "the right thing to do"	Community norms based on a set of shared values. In the case of climate change, this would mean that people feel a social pressure to care about climate change and/or to enact climate-friendly behaviours

A.8 Iterative development process for Climate Change Engagement framework

Development of the Climate Change Engagement framework incorporated key opportunities for feedback and refinement throughout the research. The initial conceptual elements of Behaviour, Knowledge and Social Norms were identified through a close review of CCF-related materials, discussion with key stakeholders within Scottish Government and our own academic and practitioner knowledge in relation to individual- and community-scale processes of change. These three elements formed the basis for identification of an approach to this research and the selection and implementation of methods for data collection. The final framework has been informed through analysis of these data alongside continued engagement with literature and dialogue with stakeholders.

A.8.1 Policy stakeholder input

In early discussions with policy stakeholders, we reviewed several draft logic models being considered for framing the outcomes of CCF projects. The logic model structured outcomes in terms of community, carbon reductions, legacy and climate literacy. Examples of outcomes identified within these categories provide insight into the types of change that policy makers were looking for from the CCF as a whole. These include:

1 Community
   - Empowered communities with sustainability as a core purpose
   - Increased community cohesion
   - Sustained and stronger community organisations
   - Carbon reductions

2 Communities emit less carbon
   - Community-level action makes key contribution to meeting targets
   - Communities jointly own Scotland's climate change targets

3 Legacy
   - Community benefits viewed as important as the environment
   - Young people / next generation are engaged
   - Disadvantaged communities resilient to climate change
   - **Sustained low-carbon behaviours**

4 Climate Literacy
   - **Communities understand the connection between their behaviour and climate change**
   - **Communities move to lower carbon living**
   - Communities more adapted to climate change
   - Climate change: global and local priority
   - Communities are advocates for low-carbon action / change
   - Bottom-up call for climate change action (i.e. wider than NGOs)
   - Sustained engagement with tackling climate change

Our research focused specifically on the items in bold, identified as gaps in the previous reviews of the CCF. [38]

A.8.2 Practitioner stakeholder input

An additional dialogue occurred during a workshop session at the CCF Gathering in November 2017. This workshop formed an opportunity for discussion and feedback from the CCF community of practitioners. The key points made by these CCF stakeholders are summarised in Table 2, along with our reflections on how this feedback informed the remainder of the project.

Table 2: Early feedback on our Climate Change Engagement framework from participants at the CCF Gathering in November 2017, along with the resesarch team's reflections on it.

Question: How useful is the engagement with climate change framing for reflection on your CCF-project activities?	
Comment (from workshop flipcharts):	**Research Team Reflection**
"This research is a new, different way of measuring the success of a project with words in addition to measurements of carbon which can be ambiguous to members of the public"	That is exactly what we hoped the reaction to our project would be.
"Need consistency of language" "Consistency of language – glossary. Specific examples / case studies / quotes. More detailed questions under the headings"	Yes, we agreed with this and that was a key motivation for initially developing this framework. As the project progressed, we were able to firm up our language. In particular, our interaction with the case study CCF projects allowed us to find specific examples of what the elements of the framework looked like on the ground and how projects were going about trying to change these in their communities. This in turn allowed us to finalise our definitions.
"Issues around the framing of 'social norms' element of the research" "Social norms – what's that? What scale?"	The social norms aspect was indeed the most challenging part of the framework and took a long time to crystallise. The distinction we have made between descriptive and injunctive social norms, which we translated into plain English ("what's the normal thing to do?" and "what's the right thing to do?") has hopefully made this clearer.

[38] Hilliam, A., Moir, S., Scott, L., Clark, T., Smith, I., & Changeworks. (2015). *Review of The Climate Challenge Fund* [Report]. Retrieved from Scottish Government Social Research website (accessed October 2020): http://www.scotland.gov.uk/Publications/2011/06/28142748/0. Brook Lyndhurst & Ecometrica. (2011). *Review of The Climate Challenge Fund: Full Report* [Report]. Retrieved from Scottish Government Social Research website (accessed October 2020): http://www.scotland.gov.uk/Publications/2011/06/28142748/0.

Question: How useful is the engagement with climate change framing for reflection on your CCF-project activities?	
Comment (from workshop flipcharts):	**Research Team Reflection**
"Missing the material part" "Material aspect is missing"	Yes, and this was initially a concern within the research team too. However, we realised that our research was focused on CCF projects' effects on *people* because *engaging people with climate change* is the main aim of the CCF. Projects' effects on material was interesting to us to the extent that this then resulted in changes in behaviours, knowledge or social norms in the community. See A.6.2 above, "The ISM Model of Behaviour Change".

A9 Conclusions and reflections

This new Climate Change Engagement framework is presented to understand the CCF's contribution to Scotland's transition to a low-carbon society. The aim is to provide a roadmap for what was previously a vaguely defined concept of "Carbon/Climate Literacy" at the intersection between the CCF's "climate-focused" and "community-focused" outcomes.

Two key points can be drawn from this material:

- The Climate Change Engagement framework treats behaviour change as a process. This feeds directly into "helping people to explore and adopt low-carbon behaviours".
- Including knowledge and social norms highlights the CCF's contribution to "building community capacity to embed a legacy of continued bottom-up change that can also support larger-scale policy interventions".

Overall, this represents a significant step forward in recognising CCF project success and the CCF programme's unique policy role at the intersection of climate change action and community empowerment.

Appendix B CCF project impacts

A key question for this research is "what are the types of impacts that CCF projects might have on their communities?" In this appendix, we use the Climate Change Engagement framework as a lens through which to examine what impact looks like, specifically in relation to the process of changing behaviour, addressing knowledge in relation to climate change, and considering social norms or pressures within the community.

Our data collection[39] across five CCF project case studies,[40] found evidence of changes in all of three of the elements and their respective components of our Climate Change Engagement framework. Combining these individual pieces of evidence across individuals and across case studies allows us to comment on the processes by which behaviour, knowledge and social norms change within a community.

Note that this appendix focuses on describing and understanding the various types of impacts that CCF projects have. The strategies and approaches which CCF projects were using to achieve these impacts are described in Appendix C (CCF project design). Impacts at the scale of the whole community are described in Appendix E (Assessment of community-scale impact).

B.1 Impacts on behaviour

We have conceptualised the behaviour change process as consisting of five components: *discovery, interest, trial, learning and consolidation.* The quote below illustrates how shifting behaviours in climate-friendly directions is a process. The interviewee first describes how he 'saw' the behaviour (discovery), then got involved (trial), and gradually became more embedded (consolidation), moving from an advisory role to a more active role within the CCF project:

> *When I saw they're doing it [home energy audits] in [a] more structured way, I found it's good to be associated. So, my role initially was advisory. Then they started also inviting me into some of the workshops, which I found again very nice, interesting. Then they started involving me in a couple of other programmes, like they got some funds for cycling distribution.* (interviewee, City Centre case study CCF project)

B.1.1 Discovery

The discovery component of the behaviour change process involves people becoming aware of other ways of doing things. Across our case studies, we found that projects were proactively demonstrating alternative behaviours, for example, recycling, upcycling, mending or altering as alternatives to throwing things away. In some of our interviews there was a sense that people are just generally more alert to different ways of doing things. For example, throughout one interview although no specific example was given, the individual described a wide range of general changes that they were becoming aware of in the community – from more evidence of environmental activity, to greater efforts to reduce waste, to a wider range of transport options, and so on. This discovery dimension to behaviour is illustrated through these comments from our interviews:

[39] In this appendix, we draw primarily on the qualitative interviews (with CCF project volunteers, stakeholders and other members of the community) and reflective workshops (with staff and volunteers of the case study CCF projects). For a full description of our in-depth approach to data collection, see Appendix K (Research approach).

[40] For a full description of the case studies, see Appendix J (Project case studies).

> *I think it [community gardening] still seems like it's at the stage where people are finding out about it.* (stakeholder interviewee, Rural Town case study CCF project)

> *They can see [the electric/car club vehicles] when they're passing through the spaces and there's obviously stuff in the newspapers, local newspapers and stuff …* (interviewee, Rural Town case study CCF project)

From these quotes we see that discovery of climate-friendly behaviours is clearly happening in our case study communities. It can be prompted in many ways – through a visual presence on their high street or through a notice in the local paper, for example. Having these kinds of cues in the community means that people come across them in the course of their everyday lives and routines. This means that people do not need to attend a meeting or an event specifically about climate change, a topic they might think is not for them. Instead, they are encountering prompts and cues about climate-friendly behaviours in the course of everyday life, which can be indicative of the social norms within a community.

B.1.2 Interest

As we analysed the interviews and workshops material and reflected on our fieldnotes, it became clear that there was a distinct part of the behaviour change process occurring between people discovering a new behaviour and trying it for the first time. This is illustrated in the following comments from participants:

> *And when I started going out with the bike for small shops and around, he [young son] started to get interested.* (interviewee, City Centre case study CCF project)

> *Then when I started a little bit it just like sky-rocketed my interest. So I think what [this] shows me is that like…to get people interested they need to be involved because I think before I was involved I was just sort of like…a passive recipient you know?* (interviewee, Accessible Town case study CCF project)

> *You can tell them how they can do it [home energy saving], but they want to keep talking about it, but not actually do it. So, it's converting the rhetoric to the reality and it's that barrier… which is the big hurdle and I'm not sure that any of the initiatives are actually addressing that.* (stakeholder interviewee, City Centre case study CCF project)

These quotes illustrate that there is a distinct component of behaviour change which is more than simply having discovered and become aware of different behaviours, but not yet ready to actually do something. In the last quote this is expressed as people wanting to 'keep talking about it' rather than actually doing it as a way of delaying change.

B.1.3 Trial

A key part of the behaviour change process enabled by CCF projects is allowing people to trial a new behaviour for the first time. Not all behaviours need much trial, but these quotes show how the visceral experience of actively engaging in an activity can spark further engagement:

> *It's giving them something to think about […] Next day if you're in […] you would see them coming in with bags and they genuinely have went home and cleared out, and you know they've thought 'right well I'm going to put that in there, it's going to good use for somebody else'.* (interviewee, City Burgh case study CCF project)

> *[G]oing along to the [project name] you can see… people can see […] the food and everybody eats the food.* (interviewee, Accessible Town case study CCF project)

The trial component is therefore embodied – people want to experience what the behaviour feels like – emotionally, physically and cognitively. Our participant observation provided further insights into the importance of this component, suggesting that it may not only be about the behaviour itself but also about how it makes them feel afterwards. Where the experience of trialling a new behaviour goes well, people make associations with positive emotions. This was evident, for example, in the Rural Town case study in which people who would never normally ride a bike were encouraged to trial the electric bikes and enjoyed the experience. An additional example includes the swapping of old clothes and letting someone else get the use of them, rather than putting them in the bin which can create a feeling of doing the right thing.

CCF case study projects that manage to make strong associations between positive feelings (such as satisfaction, contentment and achievement) and the trial of a new behaviour (such as through creating a nice space or forming relationships with others) are more likely to encourage people to trial a change in their behaviour. So, adopting climate-friendly behaviours has a strong emotional dimension attached to it which is important to people during the trial component, and could influence whether the behaviour is extended to the learning component.

Evidence from the reflective workshops also highlights the importance of the trial component, especially in the transport-focused case study CCF project. Project staff commented a great deal on how they had allowed people to have a positive first experience of using an electric vehicle:

> *A small number of people used the eVan and found it handy and economical for short journeys.* (Project Manager, workshop, Rural Town case study CCF project)
>
> *We had two of the eBikes and we gave each of the groups of children a quick overview ... it was quite busy, quite noisy, quite intense but the kids were so enthusiastic and wanted to know about the bikes, about the cars. (Project Manager, workshop, Rural Town case study CCF project)*

B.1.4 Learning

One of the main aims of CCF projects is to teach their participants new skills and provide them with the know-how they need to undertake particular behaviours. This is illustrated in the following quotes:

> *And we realised a lot of the time we leave the rooms and we leave the lights on and things like that, so that has changed quite a lot for me…so it was very good learning I would say, lesson for me because I noticed that after that I was looking more carefully how much water I put into my kettle, not to boil too much if I don't need it.* (interviewee, City Centre case study CCF project)
>
> *Certainly the Make Do and Mend workshops are very popular so people are learning how to mend things or how to make things out of something else they've got so it's getting reused rather than just thrown away.* (interviewee, City Burgh case study CCF project)

The evidence from the workshops suggests that learning new skills is an active process, in which the project staff are directly engaged, running skills workshops (as done in the Accessible town and City Burgh case studies), home visits (conducted as part of the Accessible Town and City Centre case studies) or information events (Island case study), for example. The workshop material also shows that these learning activities can be quite popular, with several projects reporting very high participation rates, or even waiting lists, for some of their workshops.

It was also clear to the researchers that involvement with CCF projects as a participant, beneficiary, volunteer or employee, can enhance people's personal skills, confidence,

communication and social skills. CCF projects can thus have a significant impact on individuals' wellbeing through providing opportunities to learn skills and build confidence. This is an important element of climate justice, in which the transition to a more sustainable society includes addressing social injustice as well as tackling climate change.[41,42] For many of the people we interviewed, the personal learning and development they felt they had achieved through CCF project involvement was just as important an outcome as contributing to tackling climate change. For some, learning about the environment and climate change was the most important reason for becoming involved, and for others it was the opportunity to combine social and environmental learning since they saw the environmental crisis as a social and political problem.

B.1.5 Consolidation

The fundamental aim of behaviour change initiatives is to encourage consolidation of new behaviours; in the CCF, these consolidated behaviours would contribute to creating low-carbon communities. While the surveys conducted as part of this research did not find substantive evidence of this at the scale of the whole community,[43] the interviews and workshops were able to identify examples of consolidation for individuals.

Consolidation of new behaviours can be seen to occur in two ways. It is achieved when people form new habits that become embedded in their everyday lives. It could also occur when someone makes one-off decisions that affect their climate-friendly behaviour in the long term.

In terms of forming new habits, participants noted how the behaviours promoted by the projects were being taken up and repeated so that they became part of people's routines. These habits were wide-ranging, from people using the car club to do their weekly shopping (Rural town case study), to changing their pattern of energy use at home (City Centre case study) or visiting a swap shop on a regular basis (City Burgh case study). With respect to this latter example, one participant noted that:

> *People aren't just coming and joining [the swap shop] and then going away again, people are coming and joining and then coming back, coming back, coming back.* (Project Manager, workshop, City Burgh case study CCF project)

In the interviews, people described different ways in which they were trying to repeat and reinforce climate-friendly behaviours to make them more embedded within their everyday lives. One participant explained that cycling is becoming part of their commuting routine, and that this brings benefits in terms of exercise:

> *I have started using [the] cycle now, I'm going to cycle to the office, it's keeping me fresh as well, and my body has exercise.* (interviewee, City Centre case study CCF project)

In the City Burgh case study, a volunteer described how, through their participation in the CCF project and the examples they had seen of reusing old material, they reconsidered throwing away an old piece of furniture and instead recycled it into something new:

> *I was going to throw out a wardrobe and I broke it all up and I rebuilt a breakfast bar with it! So that was only because I worked with a joiner in here and he*

[41] Dinnie, E., Hague, A., Msika, J., Irvine, K.N. & Wilson, R. (under review). Negotiating social and climate justice in community-based initiatives. *Spatial Justice.*

[42] Agyeman, J., Schlosberg, D., Craven, L. & Matthews, C. (2016). Trends and Directions in Environmental Justice: From Inequity to Everyday Life, Community, and Just Sustainabilities. *Annual Review of Environment and Resources*, 41: 321-340.

[43] For details of the survey results, see Appendix E (Assessment of community-scale impact).

> *showed me how to do all this work.* (interviewee, City Burgh case study CCF project)

This illustrates how a kind of behaviour (repair/reuse) promoted by a project has been internalised and used alongside learning new skills.

The Island case study provides a good example of a project making it easier for people to change their habits. In this example, the project opened donation 'micro-shops' in villages around the island so that people could recycle or donate items without having to travel far. One interviewee felt that this helped remove a key obstacle (travelling) to uptake of the new behaviour, noting that the micro-shops would give people "more of an opportunity to comply with the behaviour they've already got without having to travel so far to do it" (Island case study CCF project).

In terms of the second way in which people consolidated new behaviours, this involved making one-off changes that affect their ongoing energy use as a result of what they had learned or experienced through the CCF project. Examples include people changing the lightbulbs in their home to energy saving lightbulbs (City Centre case study), investing in a dishwasher to reduce the energy cost of washing dishes by hand (City Centre case study) or switching to green energy tariffs, motivated by environmental reasons (Accessible Town case study). In the Rural Town case study, some people gave up their car, decided not to replace their second car or purchased an electric bike. These decisions have long-term implications for people's impact on the environment.

Consolidation is closely related to descriptive social norms as exemplified in the following comments from three of our case study projects:

> *On a local level we have people who are coming here now as a first point of call when they need stuff, rather than getting new things.* (interviewee, Island case study CCF project)

> *Yes, I recycle all my stuff, no matter what. And I bring it in. And I've cut right down in buying clothes.* (interviewee, City Burgh case study CCF project)

> *A couple of families have given up their second vehicles.* (stakeholder interviewee, Rural Town)

The interviewee in the first quote in particular describes how behaviour can become routine at a community level when many people engage in that behaviour, thereby normalising it.

B.2 Knowledge impacts

One aim of the CCF programme is to promote knowledge about climate change. We identify two types of knowledge promoted by CCF projects:

- Knowledge about climate change as an issue
- Knowledge about the links between behaviour and climate change

Over the course of our work, it became clear that our case studies not only affected community members' knowledge about climate change specifically, but also increased their awareness of wider environmental issues. In some cases, we found evidence of people just becoming more aware of social, ethical or political issues more generally. This is described in more detail below.

B.2.1 Climate change as an issue

Many of our interviewees mentioned climate change as an issue. However, they often did not go into much detail beyond that, just saying the CCF was 'about climate change'.

Often their responses were even more vague such that had we focused only on specific mentions of 'climate change', our analysis would have missed a great deal of evidence showing increases in general concern for 'things' or 'issues' as a result of exposure to the projects:

> *I feel there's a huge awareness like amongst [the island's] population for the type of issues that we're facing on a global level and like to try and solve these on a local level.* (interviewee, Island case study CCF project)

> *Certainly, myself I think I've definitely become more aware of things....* (interviewee, Accessible Town case study CCF project)

Often, when pressed during the interviews, interviewees could generally state that they were *more aware,* but could not always explain specifically *what* they were more aware of. Although people were not able to articulate the nature of the increase in their awareness, we believe that such comments nonetheless indicate an important step in people's knowledge acquisition and should be recognised as such. It is particularly interesting because it is a mainly "passive" form of knowledge transfer, relying principally on the projects' simple presence in the community.

We also have evidence of the projects raising awareness of specific environmental issues:

> *But even recycling, how much does actually get [recycled]? […] A big conversation we have had at the hubs has been about supermarkets and how much packaging.* (interviewee, Island case study CCF project)

> *Since I've come to [this area], my awareness of food waste issues has like sky rocketed because of everything that's going on here to raise awareness and I'm involved with the [project name]…so anyway I have a very strong awareness of this issue sort of in my personal life.* (interviewee, Accessible Town case study CCF project)

Here, the first interviewee explains how the CCF project in their community helped to generate conversations between participants, raising awareness about the issue of excessive packaging. The second interviewee explains how their awareness of food waste issues has been increased through project participation. These illustrate how CCF projects often increase people's knowledge about non-climate-related environmental issues.

Indeed, the distinction between climate change and other environmental problems is blurred across our interviews and even within the project teams. For example, for some volunteers in the Accessible Town case study, climate change denoted the environment, and especially the local environment around the town, because it was their job to keep it clean. Again, focusing narrowly on climate-related awareness-raising would miss CCF projects' impacts on their communities' concern for a broader range of environmental issues. This is illustrated particularly well in these comments from a CCF project staff member which cover fairtrade goods, organic food and energy use in the same conversation:

> *So stuff we were using [in this skillshare session] was either fairtrade or wasn't fairtrade and both gave opportunities to talk about [what] fairtrade means. […] We could then look at organic and non-organic agriculture, and climate change and then the conversation just developed.*

> *I heat a pan on a stove, we talk about how important it is to use a pan that's the right size. I teach them to use a bain-marie. It just evolves, it's a natural conversation.* (Skillshare Coordinator, workshop, Accessible Town case study CCF project)

However, we did also find evidence for specific changes in awareness and understanding of climate change as an issue in and of itself. This is exemplified by comments made by several individuals in the City Burgh case study:

> *Yes. And then I seen how much they [the project team/managers] believed in it [climate change] and I thought, 'There must be something in it.' So I started to believe in that and I started to think the way they were thinking.* (interviewee, City Burgh)

> *I realised what it was about, it was to do with climate change…and I think the climate change is quite important now. I never ever thought of it before, how it makes a difference. It quite impresses me actually, it does.* (interviewee, City Burgh case study CCF project)

The above quotes show that the projects and the CCF project managers can be instrumental in raising people's awareness of climate change as an issue. In the first quote, the interviewee, inspired by the project managers ('they'), starts to believe that climate change is real. The second interviewee realised when they started volunteering that the project was really about climate change. They then describe how the project has made them realise the importance of climate change and how, to their mind, they are being 'educated' about this through the project.

It should be noted that this set of quotes all come from the same project, where the project team gained a lot from the Carbon Literacy training:[44]

> *I think a lot of people think they know about the environment but until we went on this training course, we were like wow, there's so much you can learn.* (Project Manager, workshop, City Burgh case study CCF project)

The increased awareness and understanding of climate change as an issue in the project staff team was then passed on to the project's many volunteers, whose confidence increased as a result:

> *The conversations now are a lot different. People are chatting about it in a different way, in a more confident way. Before they would maybe avoid the topic because they were – a bit like when you go to a foreign country, you don't speak the language in case they ask too much. Now they're taking the question head-on and are a wee bit more confident about it as well.* (Project Manager, workshop, City Burgh CCF project)

Similarly, a different project noticed a real turning point in their community's awareness of climate change as an issue after showing a climate-related film:

> *The knowledge people gained through the film, they were so shocked about what they didn't know about climate change because people think it's not real or doesn't apply to them and seeing this film made them think 'this is coming for us'.* (Project Manager, workshop, Island case study CCF project)

This collection of quotes illustrates that simple passive exposure to the projects seems to increase general awareness of 'things' and 'issues' and that this is an important impact of these projects. However, the intervention of the project teams (staff or volunteers) appears to be crucial to transform generally increased awareness into specific concern for environmental issues, or specific 'thoughts' or 'beliefs' regarding 'climate change'.

[44] A compulsory training course for all CCF project managers entitled "Carbon Literacy for Communities", delivered by Keep Scotland Beautiful and based on the Carbon Literacy Project's curriculum. See (accessed October 2020): http://www.carbonliteracy.com.

Finally, some interviewees demonstrated sophisticated understandings of climate change, linking it to wider systemic societal issues such as inequality, politics and land reform:

> *The concern with the commitment to sustainability, that focuses on like just carbon. I don't believe it's necessarily a strong definition or understanding of what sustainability is. I think it's...quite limited and in many ways quite weak. You need to have a very... a holistic, interdisciplinary understanding.* (interviewee, Accessible Town case study CCF project)

> *A big question would be […] the way that I live, does it reduce my carbon footprint? Probably not. Who has the smallest carbon footprint? Probably the unemployed living in a city. Yeah. Anyone who has any money has a higher carbon footprint because they're spending money. So…so yes, I grow things in the garden, I mean I've milked goats for 12 years, I grow wood, I do grow trees, and I did have a tree nursery and I burn wood. Do any of those things significantly reduce my carbon footprint? Maybe a little but really it's…is it a better way of living? Of course!* (interviewee, Island case study CCF project)

What is notable here is that the understanding demonstrated by these different interviewees is very clearly their own knowledge, built up over time and likely little influenced by their involvement with the CCF project in their community. It was implicit in conversations with them and others that they are often not the target audience of CCF projects, since their level of knowledge about climate change is already high. Indeed, their independent perspectives allow them to critique the CCF project's approach. These quotes suggest that CCF projects may be better placed to increase general awareness of environmental issues or to deliver specific climate change-related education, and may be unlikely to have much of an impact on the knowledge of people who already have a well-developed understanding of climate change.

Finally, there is another group of people on whom the projects are unlikely to have much impact in terms of raising their awareness of climate change as an issue: people who hold contrary views. These are illustrated in the following quotes from a reflective workshop:

> *I have spoken to a lot of people and the chap's comment was 'is that real? I'm not sure that that's real'. There's quite a lot of...He had knowledge, but what do they believe. Some have knowledge, but don't necessarily believe in climate change.* (volunteer, workshop, Island case study CCF project)

> *And there was a climate change denier. He came [to the carbon conversations session] every week. Very engaged. Giving us book after book saying 'It'll show you how it really is!'* (Trustee, workshop, Island case study CCF project)

A community stakeholder in a different case study also mentions climate change denial and expresses surprise at how this still exists, given the information they thought was available:

> *There's been a lot of work you know…. around climate change at the Scottish Government level as well so you would think people are more aware of it but I have had conversations with people outside of [Rural Town] that don't believe climate change…or debate whether climate change is happening.* (stakeholder interviewee, Rural Town case study CCF project)

While there were few, if any, individuals who took part in this research who do not believe that climate change is an issue, they are similar to those who hold very sophisticated analyses of the climate change issue in that neither group is likely to have been affected much by the CCF projects in our sample. The CCF projects we studied

are most likely to have affected knowledge of climate change amongst people who did not have much knowledge about it before.

B.2.2 Links between behaviour and climate change

Participants in this research also reflected on the links between behaviour and climate change although for some this was discussed more broadly in terms of environmental impact. For example:

> *Well the education piece is about "think about what you're spending on clothes, **think about the environment** and what can you actually do to help people that are not as well off as yourself?"* (interviewee, City Burgh case study CCF project; emphasis ours)

> *Some people were not thinking at all. We just initiated some type of you know "what are you doing", because **your actions might affect the environment**. Even by doing nothing, you're still affecting [the] environment. Some people, not everybody. They say 'wow there's something in it'. Which is like an eye-opener for some. That's the result of our visit for sure.* (Environmental Outreach Officer, workshop, City Centre case study CCF project; emphasis ours)

The first interviewee points out the valuable educational role being played by the CCF project in encouraging people to think about their buying habits in relation to clothing and then make the link to the environment. This individual goes a step further to query (perhaps even challenge) underlying assumptions about behaviour relating to (over)-consumption and consumerism. The second individual, a CCF project staff member, explains how some people have been encouraged to think about the environmental consequences of their actions as a result of participating in a home visit programme. Both of these quotes are examples of people making the link between their behaviour and its environmental impact.

There is also, however, evidence that not all people who engage with a CCF project make this link:

> *I'd love to say that I think all the customers totally take on the message but I think, for a lot of them, it is more about just coming in and especially that accessible element and so for other people, they're more, you know, they've got other focuses …other priorities* (interviewee, City Burgh case study CCF project)

What is evident from these comments is that engaging with a CCF project can help people make the link between their behaviour and its environmental impact, but that this does not necessarily happen in every case. In fact, these comments suggest that the project volunteers and staff have to take an active role in educating participants about the links. This becomes even more important when trying to make specific links between particular behaviours and *climate change*, as evidenced in the following quotes:

> *Some people get the landfill thing because we always have a note up of how much tonnes we saved from landfill which is handy, each month or or each year. I don't know how that works but there is a sign up there that tells you how much tonnes we've saved.* (interviewee, City Burgh case study CCF project)

> *I think all the signs are up and are actually on the windae, how many tonnes we've done. I think I put them up two weeks ago, you know, wee plaques to show everybody.* (interviewee, City Burgh case study CCF project)

> *And I think at the very early stage [the project is] catching young people and saying, 'Do you understand that by us buying brand new clothes, sometimes very cheaply from the likes of Primark, that will ultimately contribute to CO2 increases […]'They do that a lot in the workshops, teaching kids how to turn t-shirts into*

> *something else, these type of things, […] but at the same time they are teaching them that this is affecting your environment* (stakeholder interviewee, City Burgh case study CCF project)

> *So, we can talk about carbon but what does that mean in a light bulb in a house? So, these workshops actually show it to them physically and that stimulates some very good conversations.* (stakeholder interviewee, City Centre case study CCF project)

These quotes all show that the CCF project teams have an important role to play in helping people to understand the links between particular behaviours and their impact on the climate: through signs in shop windows, through interventions in schools or through workshops and facilitated conversation. The first two quotes additionally describe the CCF project's role in displaying information to the wider public ('show everybody') about the project's contribution to carbon reduction, and demonstrate an understanding that the project not only has to reduce carbon, but also tell other people what it is about and why. The third quote, from a stakeholder in the City Burgh project, is positive about the project's efforts to make explicit links between behaviour and climate impact. However, it is not clear that the first two interviewees themselves (both volunteers with the same project) exactly understand how the tonnage figures were calculated and what they refer to: tonnes of clothes saved from landfill or tonnes of CO_{2e} emissions avoided? This emphasises how the knowledge required to link behaviour to climate impact specifically, rather than its environmental impact more generally, is not intuitive and is quite technical. As put by a project staff member:

> *Generally speaking, people are aware about environmental impact, but not necessarily carbon footprint. This is a very specific term. Not everybody is familiar with that.* (Outreach Worker, workshop, City Centre case study CCF project)

Overall, this collection of quotes shows that making the cognitive links between behaviours and their environmental impact requires some intervention from project staff and volunteers. They also illustrate that linking behaviours to specific climate impacts is even more difficult, possibly due to the technical nature of this knowledge.

B.3 Impacts on social norms

The community aspect is central to the design of the CCF as a policy intervention. Therefore, we considered it crucial to look for changes in social norms. However, as noted during our stakeholder workshop at the CCF Gathering in 2017,[45] these were difficult to define at first. As we engaged with the existing literature and empirical material, it became clear that we were looking for two distinct types of social norms:

- Descriptive social norms, in which many people are behaving in climate-friendly ways i.e. it is the 'normal thing to do'
- Injunctive social norms, in which people feel a social pressure to care about the climate and/or enact climate-friendly behaviours because it is 'the right thing to do'

We found material relevant to both of these types of social norms and describe and analyse it below.

[45] For more detail on our engagement with CCF practitioners beyond our case studies, see Appendix A (Climate Change Engagement framework), specifically Section A.8.2 "Practitioner stakeholder input".

B.3.1 Descriptive social norms (the normal way to do things)

In the workshops we asked people about the extent to which they thought there was evidence of change across a large number of people in their communities. In response, the CCF project teams mentioned that one in every nine inhabitants had become a member of the project (Island, workshop 2) or that the number of people using the project's shops had increased over time (City Burgh, workshop 3). The following quotes convey the kinds of changes noticed by interviewees in two of our case studies:

> *It's [re-using and upcycling] become more part of the community and people are thinking of us [the project] now. They're coming in and saying listen I've got these would you be interested?* (interviewee, Island case study CCF project)

> *But there's lots – I mean, around town there's lots more people on bikes.* (interviewee, Rural Town case study CCF project)

> *[The project] would not have existed when I grew up in [this village]. Neither would have [name of environmental organisation], or any of those other organisations. That's…that's something which I was surprised about really when I came back to [to the island], just how widespread that had become.* (interviewee, Island case study CCF project)

These three quotes provide illustrative examples of descriptive social norms, describing what has become normal in the community. The first quote shows an example of waste-related behaviours such as passing unwanted items on for reuse and upcycling becoming normalised. The next quote shows how cycling in town has become commonplace. The third quote gives an interesting example of another type of descriptive social norm; rather than a particular behaviour becoming normal, the interviewee points out that environmentally focused organisations have become prevalent in the community. In this latter case, change in the descriptive social norm took a long time; this interviewee only noticed a change when they came back after a period of absence and encountered environmental organisations that were now well-established but had not existed when they were younger.

This then begs the question as to how descriptive social norms spread in a community. The following quotes provide some ideas of the process:

> *Aye, because this place has expanded because of word of mouth so they are obviously going home and telling their mums and it's expanded mair. And you've nae idea how many times I've typed in the same address and the whole family has eventually joined.* (interviewee, City Burgh case study CCF project)

> *Well obviously the shop moved, it's in a better location than where it was originally which has attracted more members. And we've got a lot of new members since we moved so it's obviously still working well.* (interviewee, City Burgh case study CCF project)

> *It's probably more something that they do. […] They see more people on bicycles, they'll kind of think about changing their behaviour, maybe without the knowledge of the background of it.* (stakeholder interviewee, Rural Town case study CCF project)

Perhaps unsurprisingly, the quotes show that descriptive social norms spread through word of mouth (first quote), increased visibility of the project (second quote) and imitation (last quote). The last quote highlights how once a descriptive social norm gets established it can develop a momentum of its own, with people following the trend without knowing how it started. These interviewees all highlight the role that CCF projects play in 'spreading the word' within their communities about what people can do to tackle climate change.

However, interviewees also mentioned some barriers to the spread of descriptive social norms:

> *Changing people's belief system is extremely difficult.* (stakeholder interviewee, Rural Town case study CCF project)

> *I think where our project has done a lot of work is in the schools and I think the children really get it. They can see those obvious links but […] it's just not speaking to the older generation, they don't get it at all. It's a generation basically that have grown up with plentiful oil and their lifestyle is very different.* (interviewee, Island case study CCF project)

These quotes suggest that knowledge-related descriptive social norms are possibly more difficult to shift. We also note that opinions on age in relation to climate change were very mixed, with some people, as above, thinking that young people were more receptive to messages about climate change and the need to change behaviour than older people. Other interviewees gave the opposite view – that older people could remember a 'time before oil' and were more knowledgeable about making things last, and not letting anything go to waste. In one case study older people were actively passing on their sewing and mending skills to a new generation.

The difficulty of changing knowledge-related descriptive social norms is generally backed up by the project staff in the workshops. For example:

> *I think we're at the beginning, I think we haven't even started scratching the surface of the general population taking climate change on as something that they need to think about. […] I'm still having conversations with people about whether climate change is real and they're engaged, intelligent people, they're not the kind of Donald Trump brigade. They're ordinary people and they're saying 'is it real?' 'How…will it impact on me?' ' Is there anything I can do about it?' 'Well I'm not sure!'* (Skillshare Coordinator, workshop, Accessible Town case study CCF project)

However, some project staff were more optimistic:

> *I think with the various workshops, I mean like the whole island workshops in particular, I think …that over the course of the year this project has certainly made a difference to the people of this island. I think they're far more aware now. (Hub Manager, workshop, Island case study CCF project)*

It should also be noted that many of the widespread changes in behaviour listed above may be partly due to the presence of CCF projects, but that these changes were also dependant in part on wider infrastructure such as cycle lanes and traffic-free zones around schools or recycle bins and collections at local collection points. Material infrastructures constitute a significant barrier and enabler of changes in behavioural descriptive social norms. For some projects, their main purpose was to provide the infrastructure (e.g. swapshops) to allow a particular behaviour (e.g. swapping clothes) to become normal in their community.

B.3.2 Injunctive social norms (the right thing to do)

Injunctive social norms differ from descriptive social norms in that they are based on a shared set of values around the 'right thing to do'. Examples of the types of injunctive social norms that our interviewees mentioned include:

- Considering the environment or the climate when making decisions
- Being careful with what you're doing
- Being aware of personal responsibilities and actions

- Being altruistic and looking after the planet and future generations
- Acting in an ecologically responsible way

Injunctive norms could also be more specific, for example, one project team felt that they had changed people's values with respect to whether they would replace their second car.

These injunctive norms can reinforce each other, as shown in the following quote from a project team member:

> *The third thing which I observed is people get more involved into not directly related issues with energy but in environment as a whole. For instance, I noticed people started being interested in initiatives like signing petitions about some chemicals or pesticides on Facebook or something. That also is an impact of our visits.* (Environmental Outreach Officer, workshop, City Centre case study CCF project)

These norms can be spread in various ways, as shown in the following quotes:

> *Yes, definitely it's impacted on people's lives in different ways I think for sure. There's a huge awareness as well on an island wide level that [the project] is kind of…is occupying that space whereby a certain standard is being set in order that the businesses should be sustainable and [act] in a responsible way ecologically.* (interviewee, Island case study CCF project)

> *But I do think it has fostered lots of conversations in different settings, in school settings and community groups, through their workshops. And very supportive environments where people can have a meaningful conversation about their own personal responsibilities and actions and how that can be detrimental or positive for the (climate).* (stakeholder interviewee, City Burgh case study CCF project)

The first quote shows how the presence of a CCF project has stimulated thinking and ideas and set a standard for other organisations and businesses in that community, spreading injunctive social norms from one group to the next. The second quote shows how a different CCF project has created supportive environments where questions can be raised and thinking done about the environmental and climate impacts of behaviour.

The reflective workshops with the project teams also highlighted examples of where injunctive social norms were changed as a result of creating a supportive "space". These examples provide some insightful observations of the pressure from an injunctive social norm to be acted upon:

> *[A] world-famous sculptor would never have engaged with that kind of thing before, but he's made this cause his thing now. He's made four sculptures for the eco-friendly cause, wrote a little blurb about how he was inspired by this film to do this line of sculptures.* (Project Manager, workshop, Island case study CCF project)

> *[T]he success is the young people changing their attitudes and the stigma attached to preloved clothing and passing on the message to families. Obviously we changed the concept of the schools this time to be setting up a swap shop. Over the weeks, you saw the attitudes changing and passing it on to families.* (Education Outreach Officer, workshop, City Burgh case study CCF project)

In our interviews we also found some evidence that people knew what was the right thing to do but that this was not always possible for them, as exemplified in the following quote:

> *[A]a lot of environment notions are based on this altruistic let's look after the planet. It's future generations, it's for our children, but the bottom line is unless people see a direct benefit to their quality of life, their daily bread, why should they buy into that? Because they haven't got the altruistic…they haven't got time in their lives, they're too busy looking after X number of kids, their family, or feeding themselves, or working very hard for a living, clean living, nice people, but don't have the time to devote around that […] it doesn't meant anything to people who don't have those norms and those values.* (stakeholder interviewee, Rural Town case study CCF project)

This interviewee points out that people are balancing lots of different priorities and that tackling climate change may not be at the top of their list. At the very least, it has to be combined or fitted in with other priorities, including financial ones. In other words, they make a case that climate change behaviours have to be easy for busy people to implement, rather than relying on appeals that they are the 'right thing to do'.

The other barrier to the diffusion of injunctive social norms concerns identity. When a norm is seen to apply to a particular social group, it weakens the pressure on people who don't feel part of that group, as explained in the following quote:

> *I think there is…a recycling message coming across, but I don't think it's very loud. And I think it's still perceived as old people with spare time on their hands having a cushty time, sitting in the village hall one day a week and receiving stuff.* (interviewee, Island case study CCF project)

This person talks about perceptions of the type of person that gets involved in environmental behaviour, especially in a small, rural community. The implication is that people who feel they do not fit this description may not want to get involved. Across the case studies, interviews revealed that there was perceived to be a small group of people within each community who were enacting climate-friendly behaviours, but they were often perceived as the 'green brigade' or 'eco-warriors', and therefore different.

All of our case study project teams were aware of this potential barrier and had various ways to overcome it. One project used its High Street location during the Christmas period, a time of high footfall, to great effect in reaching out beyond 'the usual suspects':

> *There were a lot of people stopping and reading [the "sustainable little Christmas" shop window display] which maybe they wouldn't have done otherwise.* (Operations Manager, workshop, City Burgh case study CCF project)

A different case study consciously holds most of its activities in a visitor attraction, bringing in people who would not necessarily be involved and allowing them to mix with the project's more usual audience. Other, not necessarily climate-related, groups also hold activities there and the CCF project team believe that this co-location is a key way to encourage the spread of social norms between diverse social groups. In one example, a local group whose remit is to reduce loneliness and encourage good mental health helped to insulate the CCF project's shed. One of their ideas was to experiment with renewable energy sources (such as photovoltaics) to charge their power tools. It was interesting to note that proximity to a CCF project had prompted this group to consider how they could make their own activities more climate-friendly.

Another similar way of reaching new audiences is illustrated in the following quote:

> *I remember saying to [Project Manager], months ago, I get out and about quite a lot in [town], I'm in the hall and I think I know who's who and what they like and I said to [the Project Manager], I know exactly who's going to come and be interested. It's been the complete opposite. There's been people who've been interested who I would never have imagined would have really cared. I think*

that's because I've gone to them. (Hub Manager, workshop, Island case study CCF project)

In yet another case study, the identity of project staff was very important in reaching new groups. Employing a Polish member of staff has engaged many more people from the Polish community with the project.

On the other hand, projects also emphasise the importance of strengthening injunctive social norms within the project team – leading by example and seeing themselves as advocates for climate-friendly ways of living:

I've done two things this year. One is to stop buying plastic bottles and the other is public transport… When I was working another job, I didn't like public transport. Now I choose public transport when I can…I still have a car, I still have a diesel car, I drive less, I walk more, it's baby steps. Lead by example. (Project Manager, workshop, Rural Town case study CCF project)

I sold my Mercedes. (Project Facilitator, workshop, Accessible Town case study CCF project)

B.4 Conclusions and reflections

Here we have focused on describing and understanding the various types of impacts that CCF projects have on their communities. These findings reveal the myriad ways whereby CCF projects influence the uptake of new low-carbon behaviours, knowledge and social norms. The empirical insight provides opportunity to identify the factors that facilitate climate change engagement as well as barriers to take-up. These processes are complex and not necessarily linear or progressive, and examples of this are scattered throughout the appendix. Recognising and understanding these many small, not necessarily carbon-based changes is important not least because they are arguably the building blocks for future community-level impact.

The key points are:

- Behaviour change is a dynamic process. It consists of discovery, interest, trial and learning. CCF projects play an active role throughout this process.
- Consolidating a climate-friendly behaviour is a component of behaviour change at which long-term carbon savings are locked in. Such consolidation builds on the interplay of discovery, interest, trial and learning. While behaviour may become consolidated during the lifetime of a CCF project, or it may not. Thus, focusing solely on whether behaviours are consolidated or not misses the full extent of CCF projects' impacts on participants' behaviours.
- CCF projects' impacts on participants' knowledge goes beyond climate change,covering environmental issues more broadly. Climate-specific knowledge impacts are a small part of CCF projects' total environmental education successes.
- Descriptive social norms spread "virally" along a community's social networks through word of mouth and imitation. This is a benefit because new behaviour can spread without people necessarily knowing or caring where it comes from. It can also be a disadvantage when referring to the self-reinforcing inertia of particular ways of thinking about climate change. Presence or absence of infrastructure has a large effect on the normalisation of specific behaviours.
- Our evidence shows that injunctive social norms change through close engagement between people and organisations over time. The findings also

highlight social group identity as a key enabler and barrier for changing injunctive social norms. When a norm is seen to apply to a particular social group, the degree to which someone considers themselves to be part of that group can strengthen or weaken the pressure.

A common concern among policy makers and stakeholders was that people were participating in CCF projects and engaging in climate-friendly behaviours, for example by using the swap shop or borrowing an e-bike, without necessarily being aware of or understanding the climate messaging behind it. In fact, this was one of the starting points for this evaluation. However, our research shows that climate messages can be quite abstract and technical for most people, whereas ideas around generally respecting the environment and being less wasteful (also examples of injunctive social norms) were more readily understood. This suggests that, in some cases at least, re-framing the nature of the challenge might result in wider engagement. There is also the possibility that strengthening social norms, such that particular behaviours are simply seen as the normal or the right thing to do in that community, might be more productive than encouraging people to continuously think through the carbon impacts of their everyday lives.

Appendix C CCF Project Design

We specifically examined how CCF project design – the activities and approaches used to engage their community – can be targeted to achieve climate change engagement, and hence to increase the impacts of CCF projects in their communities toward low-carbon transition.

Insight for these findings are drawn from our in-depth work with the five case study CCF projects[46] – analysing their different project designs to see how these activities and approaches facilitated engagement with climate change. We present the lessons learned for each of the different elements of the framework.

C.1 Influencing behaviour change through CCF project design

In our Climate Change Engagement framework, we conceptualise behaviour change as a process involving five components – **discovery, interest, trial, learning** and **consolidation**. In this section we discuss the ways in which different project designs – the activities and approaches that were used by CCF projects – influence and interact with each of these components.

C.1.1 Discovery

People need to be aware of low-carbon behaviours before they can try them. Our case study CCF projects provided opportunities for individuals to discover specific behaviours being promoted through projects' activities in a variety of ways.

One way is through having (or creating) a physical presence in the community. This can be achieved by having a permanent space and making use of this space for activities. For example, the CCF case study project in the City Burgh has a shop where it runs 'make and mend' workshops, and the Accessible Town case study project has several gardens where volunteer sessions are organised . The Rural Town case study, which did not have a public space, placed its car club vehicles in prominent locations in the community where people would see the distinctive car club logo. The project manager also commented:

> *I take the car club van to do [project] business or just to get out. And people begin to see you in it and they begin to associate with that.* (Project Manager, workshop, Rural Town case study CCF project)

The City Centre case study project used interactive displays at public events to introduce large numbers of people to the benefits of changing lightbulbs and other domestic energy efficiency measures. This not only created a temporary physical presence but also broadened the project's reach.

Broadening the visibility of low-carbon, climate-friendly behaviours was also promoted through coverage in the local press, often to explain how certain activities worked, for example, car clubs or reuse shops. Social media was used extensively by all case study projects to promote particular behaviours and activities. Working with schools could also promote discovery amongst the pupils' families, as highlighted by the City Burgh case study:

[46] For details on the case studies, see Appendix J (Project case studies). For details on the data collection methodology, see the Appendix K (Research approach).

> *It's inviting the parents in to see a project that the kids have been involved with ... there's a lot of kids coming into the shops from the schools with their parents.*
> (Project Manager, workshop, City Burgh case study CCF project)

The discovery component (of behaviour change) thus occurs through increasing the visibility within the community of the CCF project itself and of the low-carbon behaviours that it is trying to promote.

C.1.2 Interest

Interest is about people becoming motivated to enact new behaviours. The case study CCF project teams were keenly aware of the importance of fostering the "interest" component of behaviour change. This is illustrated well in the following quote:

> *Don't advertise your project as climate change or zero waste. Tried that and nobody came. Do advertise your project as fun, "sexy" because that's kind of what people like, that upbeat, fun, what are we going to learn? People come to cook with fairtrade chocolate but not to do a zero waste cooking workshop. Tried that. Even if you give them chocolate cake, they still don't come.*
> (Skillshare Coordinator, workshop, Accessible Town case study CCF project)

It was clear when speaking with the project teams that they used a range of triggers to increase interest and motivate people to change their behaviour. These triggers could be cognitive (such as recognising environmental, health or financial benefits) or social (where people see their friends and family doing something) or emotion based (where people become curious about something new).

Emphasising the **benefits** of behaviours, trying to influence people rationally, was common across our case study projects. Economic or **financial benefits** were used by several projects. For example, making explicit the link between saving energy and saving money, or by engaging in 'swapping' clothes and other items rather than buying new as a way toward reducing the financial costs associated with the purchase of clothing. However, project officers remarked that **financial motivations were not always enough** to encourage someone to modify their current, or undertake a new, behaviour. For example, some people are proud to earn a salary that means they do not to have to worry about these kinds of savings which are considered small. Sometimes, linking behaviour with climate change more explicitly by **talking about 'not being wasteful'** was more engaging. While some people do not want to be seen to be 'counting pennies', no one wants to be 'wasteful'. One case study CCF project put it slightly differently, in that they felt it was important to answer the more general question of "what's in it for me [the participant]?" A different CCF case study project team remarked that appealing to community members' desire to be more "eco", could be more effective because this spoke equally to all people, regardless of their financial means.

Case study CCF projects that encouraged new behaviour through a **social** activity were more successful at motivating people to try new behaviours than those where the social element was missing. Those projects that focused on inherently social activities (gardening, swapping, upcycling, skills workshops) found this social element easier to include than projects that included less 'sociable' activities (home energy saving, car club). Some of the case study CCF projects were creative in devising activities to encourage social interaction between participants, for example having a regular breakfast meeting for cyclists commuting to work or university.

Interest to become motivated to try climate-friendly behaviours utilises a **combination of triggers** to encourage behaviour change; some people respond better to rational choice, such as the ability to save money or resources, while for others the attraction is in joining social activities. Interest can include environmental drivers, but framing this in terms of

reducing waste, or generally helping the environment might be more widely attractive than specifically appealing to people's desire to tackle climate change.

Just discovering a new or alternative way of doing something is not enough to make someone try it. CCF projects can be pivotal in offering opportunities that create interest, thereby helping people to move along the process that characterises the behavioural dimension of engagement with climate change.

C.1.3 Trial

Our findings suggest that trialling a (new) behaviour for the first time is a critical point in the behaviour change process. It is primarily an embodied experience that involves understanding what engaging in a particular behaviour *feels* like. A difficult or unpleasant experience at the 'trial' component can put people off completely. Case study CCF projects that could make their activities (such as workshops, volunteer experiences) rewarding and enjoyable for participants were more successful in encouraging people to trial new behaviours. Important here is the role of project coordinators and volunteers, as well as building in some fun activities into the project design (such as fashion shows or food festivals). Projects where trialling a new behaviour encouraged different feelings or physical sensations (such as cycling or the swapping of clothes) and a 'feel good factor' were more likely to encourage people to 'give it a go' even if they might at first be sceptical. The feel good factor could come from many sources – a pleasant physical sensation (such as walking, cycling, trying an eBike), a feeling of convenience (trying an electric van), gaining a sense of satisfaction (such as from learning new skills and trying them out to become accustomed to them), the sense of doing something that contributes to the 'bigger picture' or enjoying being with other people doing a shared activity (such as gardening or crafting).

To minimise the possibility of negative emotions becoming associated with new behaviour at the trial component, people need encouragement, reassurance and the security to ask questions or be curious about change without being made to look foolish or ignorant. Case study CCF projects that offered 'safe' settings, supportive and knowledgeable staff/volunteers and options to explore new practices without absolute commitment, embarrassment or blame, were more successful in encouraging people to trial new behaviours than projects that did not have this infrastructure of a supportive environment.[47]

C.1.4 Learning

Some low-carbon behaviours require people to learn new skills and become competent in how to do something. For some of the case study CCF projects this learning was an explicit part of the project design, for example through running skills workshops, organising volunteer sessions that encouraged skill development (such as gardening) or as part of home energy visits. In other projects this learning element was less explicit and occurred more informally, through conversations or encouragement from project coordinators and longer-term volunteers. The role and skillset of the project organisers/volunteers is important in encouraging learning; projects that trained their volunteers or had access to motivated volunteers found it easier to encourage learning through their activities than projects without a strong volunteer base. As well as learning a new behaviour it was common for projects to help people develop new skills and acquire competence in discussing climate change, and be more conscious in understanding the relationships between their behaviour and climate change.

[47] Researchers have suggested that having settings that are supportive of the human need to explore and make sense of things may facilitate adoption of environmentally responsible behaviour. See e.g. Kaplan, R. and Kaplan, S. (2008). Bringing out the best in people: A psychological perspective. *Conservation Biology*. 22(4): 826-829.

The learning element of behaviour change includes *formal* and *less formal* aspects of learning. Projects achieve formal learning through activities, events and training. They also encourage informal learning of skills through peer-to-peer interaction.

C.1.5 Consolidation

Consolidation is about the adoption and integration of a climate-friendly behaviour. This occurred through making a new behaviour more permanent and habitual or making one-off decisions with long-term implications. Home visits seem to have been particularly successful at generating these longer-term changes through both routes, such as changing daily energy use habits, switching to a 100% renewable electricity supplier of changing appliances. Maybe this is due to the often deeper and more one-to-one interaction between participants and project staff during the visits. The Rural Town travel-focused case study also achieved a few long-term changes such as people giving up their second cars, becoming regular users of the car club or purchasing an eBike. While our field work was too short to fully examine the presence of consolidation, it seems reasonable to assume that joining a car club or having a bicycle would result in longer-term change than a one-off event, such as buying second-hand clothes, because it involves a greater commitment in terms of investment. Making a one-off decision with long-term implications also removes the necessity to make and re-make choices about a behaviour (or behaviours) because the decision embeds (or 'locks in') the behaviour to a low-carbon practice rather than a high-carbon one. However, simply making a one-off investment (to purchase a high-value item or change energy tariff) might require further support to fully consolidate.

In other instances, consolidation was about making minor changes but embedding these changes in everyday practices, such as donating unwanted goods, purchasing food that was grown locally, or growing your own food. Such activities become embedded and long term through repetition and habit, and possibly are more social than one-off decisions with long-term implications. There was evidence from our interviewees that enacting consolidated low-carbon behaviours encouraged positive spillover i.e. the adoption of further low-carbon behaviours,[48] such as the use of reusable coffee cups and water bottles. In one case study a campaign to encourage people to carry and refill their own water bottles led to local businesses, shops and tourist information centres providing water refill stations to encourage the use of reusable water bottles as a social norm. The same community later started a campaign asking all hotels and other caterers (such as schools, trains and ferries) to ban the use of plastic straws.

Consolidation can involve a one-off decision that leads to systemic change at the household level (such as changing energy systems or swapping a second car for car club membership) or it can be ongoing habitual practices that lead to a low-carbon lifestyle. For most people it is likely to involve a combination of both long-term decisions and ongoing regular practice. Our research has shown that CCF-funded projects can encourage both kinds of consolidation. However, consolidation through repetition of low-

[48] When targeting the adoption of one low-carbon behaviour (e.g. riding a bicycle) 'spills over' to the adoption of another low-carbon behaviour (e.g. using a re-usable mug) this is referred to as behavioural spillover with positive effect (e.g. Thøgersen, 1999). It is argued that to address climate change (and other largescale environmental challenges) we need greater understanding the factors that facilitate such positive spillover (e.g. Jones et al., 2019). Thøgersen, J. (1999). Spillover processes in the development of a sustainable consumption pattern. *Journal of economic psychology*, 20(1): 53-81. Available from (accessed October 2020): https://doi.org/10.1016/S0167-4870(98)00043-9. Jones, C.R., Whitmarsh, L., Byrka, K., Capstick, S., Carrico, A.R., Galizzi, M.M., Kaklamanou, D. and Uzzell, D. (2019). Editorial: Methodological, theoretical and applied advances in behavioural spillover. *Frontiers in Psychology*, 10: 2701. Available from (accessed October 2020): https://doi.org/10.3389/fpsyg.2019.02701.

carbon behaviours can encourage reflection of other ways to change and encourage spillover behaviours that contribute more widely to addressing climate change.

C.2 Influencing knowledge through CCF project design

This section discusses the ways in which project design influences the uptake of knowledge in two areas:

- about climate change as an issue; and
- about the links between behaviour and climate change.

The research explored knowledge changes among those who participated in the project and among individuals from the wider community. While the project teams recognised that a minority of people in their communities were very knowledgeable about climate change, they all emphasised the importance of not taking knowledge for granted. Many of the project teams were in fact unsure of the levels of climate knowledge in their communities. When we asked them during the workshops to gauge the extent of climate knowledge in their communities, this question prompted considerable debate and an acknowledgement that knowledge varied greatly across their communities.

C.2.1 Knowledge about climate change as an Issue

In order to increase awareness and understanding of climate change as a specific issue, projects employed a diverse range of techniques. One of the most effective single interventions mentioned by a project team was deciding to screen the climate change-focused film "Before the Flood",[49] which catalysed a significant increase in the attendees' awareness of, understanding of, and concern over climate change:

> *I will choose the film night ["Before the Flood"] as the most successful, I would say, because it's been so powerful. Action starts with education for us really. The knowledge people gained through the film, they were so shocked about what they didn't know about climate change cause people think it's not real or doesn't apply to them and seeing this film made them think "this is coming for us". […] You couldn't really argue with what was there. […] It's been really powerful. People don't have that basic knowledge.* (Project Manager, workshop, Island case study CCF project)

In a similar vein, if not quite so direct, project teams talked about using social media to share articles and videos about climate change. One project had sent two of their staff for social media training in order to increase the project's impact.

Another active strategy for increasing awareness about climate change was to incorporate facilitated discussion into a project's other activities. For example, during skillshare workshops, gardening sessions or tool-mending events, the organiser would find ways to integrate questions and discussion about how what was being done related to climate change.

In addition to these active strategies for increasing people's awareness of climate change as an issue, project teams also used a range of more passive techniques. Leaflets gave them the opportunity to convey more information in more depth than would be possible in a conversation. These were placed strategically in information packs given to participants to take home, or laid on the table so that people waiting for the start of a workshop could read them to pass the time. Projects deployed more visual displays in situations where people were passing by, for example a powerpoint slideshow of climate change-related cartoons at a large public event, or a window display on a High Street. One project provided all team members with branded clothing: hoodies that had

[49] A 2016 documentary film about climate change narrated by Leonardo di Caprio.

"Tackling Climate Change Together" written on the back. All of these passive communication strategies also explicitly branded the projects as being about climate change. Many project team members mentioned the importance of being up-front about their climate change focus and their funding mechanism as they felt it made people trust them more.

Several of the projects did not limit themselves to narrow messages about climate change. They also communicated about other environmental issues, particularly plastic pollution, to convey the idea that climate change action links to many environmental issues. In this way projects were able to respond to public concerns that arose quite suddenly as a result of the "*Blue Planet II*" documentary. In addition, projects communicated about plant-based diets, street litter, recycling and many other environmental issues.

The role of project managers/coordinators and long-term volunteers was important in getting messages about climate change across to newer or more temporary participants. Staff and volunteers who had good knowledge about climate change, had good communication skills or had passion and conviction for the subject, were more confident at conveying messages than those who had less understanding, less confidence or less passion. However, one case study was particularly good at by-passing the project team entirely by what they called "co-locating" diverse groups – with diverse knowledge of environmental issues – in order to encourage exchange through "osmosis".

While we have identified some successful strategies for increasing awareness and understanding of climate change, this is something that was not always easy for project teams. We noticed a difference in one of our case study projects regarding messaging about climate change after the staff had been on the Carbon Literacy training. Not only did they improve the messaging in their shop about how much carbon was saved through their activities but they also ran an adapted version of the Carbon Literacy training for their volunteers. This resulted in increased confidence for the volunteers when talking with customers about carbon savings and how their project activities contributed to saving carbon, and hence climate change.

C.2.2 Knowledge about the links between behaviour and climate change

The following quote from a stakeholder underscores CCF projects' important role in making the specific links between behaviours and climate change explicit:

> *[B]y culture, a lot of the groups already do a lot of recycling and upcycling and don't waste as much 'cos of the way they were brought up to do that, and there's lack of resources, so they understand that the lack of resources is related, so using excessive resources can contribute to climate change, it's just* ***where they have to make sure that they make the link****. That's the only thing that I worry about sometimes is that they're [not] making that link and it's not just about being tight with money or looking after the pennies.* (stakeholder interviewee, City Centre case study CCF project; emphasis ours)

For this stakeholder, the experience with the CCF project was that the emphasis was on saving money, rather than on addressing climate change, and they felt the climate change side of things could have been stronger.

This is not easy for CCF projects because the link between behaviour and impact on climate change, i.e. "carbon footprint", is quite a technical, abstract piece of knowledge[50] for several reasons:

[50] Black, I. & Eiseman, D. (2019). *Climate Change Behaviours - Segmentation Study*. ClimateXChange, Edinburgh.

- The effects of behaviour do not translate into climate effects in a straightforward linear fashion
- The effects of high-carbon behaviours are experienced at a distance (time & space) from where they were created
- It is difficult to directly link specific behaviours to specific climate changes
- It is difficult to calculate the carbon savings of displacement activity

In order to communicate this complexity, our case study projects used a range of techniques.

The most direct technique was the "Carbon Conversations Schools" programme which the Accessible Town project ran with local secondary school pupils. This six-week programme of facilitated discussions, based on an approach developed by the Cambridge Carbon Footprint charity in 2006,[51] explicitly educates participants about different behaviours' impacts on climate change across all domains of daily life (housing, transport, consumption, food, waste, etc). Other projects also ran educational activities in schools where they taught pupils about the climate impacts of their area of focus, e.g. waste, transport or clothing.

Most of the time, such sustained and structured interactions with community members are not possible, so projects had to find ways to create the spaces for conversations about behaviours' climate change impacts. Two projects (Island and City Burgh) involved in upcycling activities particularly mentioned the process of collecting data as a good opportunity to discuss carbon footprints with participants. For example, weighing the items that had been re-homed through the project (and this weighing being the only requirement for someone to take something home) often prompted questions about the need to weigh items which could provide an opening for project staff to explain links to the CCF and how reusing goods and reducing consumption of new goods could help to tackle climate change. Another example was the use of a travel survey, which was so good at prompting discussions about sustainable and active travel that the project team ended up using it at all of their events, despite the collected data not always being useful:

> *We actually have this [Carbon data] sheet at all our events, just to open up a conversation. We couldn't use that data, we couldn't use those travel miles as something we've reduced but it opened up conversation. It made people think about how they came to the event, it was just a good tool for us to get our message across.* (Project Manager, Workshop, Island case study CCF project)

A third approach was even less direct. In this example, the project's primary activity was a clothing swapshop. In order to communicate the climate benefits of swapping clothes instead of buying new ones, each outfit in the swapshop window was tagged with a calculated emissions savings figure (with a re-usable tag). Like the weighing and the travel survey, this probably requires additional explanation from the project volunteers to really communicate the message, but it helps to explicitly make the link between the swapshop and the climate impact of clothing.

The case study in the City Centre urban area mainly used energy monitors to increase participants' awareness of the impacts of their behaviour. According to several members of the project team, this was a highly effective tool during home visits to visually show people how they were wasting energy. However, the monitor mainly showed the impact in pounds and pence, rather than in terms of carbon emissions. Still, the energy monitor

[51] See (accessed October 2020): http://www.carbonconversations.co.uk/p/about.html.

started people thinking about some of the consequences of their energy-use behaviours, which many had previously taken for granted.

There may also have been a reluctance on the part of projects to talk about the links between behaviour and climate change because the carbon savings made by community projects are often quite small; improving people's knowledge of the links between behaviour and climate change can sometimes make the efforts of projects to address climate change seem disproportionate to effort required.[52,53] It is also recognised that having conversations about climate change is difficult because it can create anxiety and fear for people, or place them under pressure to change.[54]

C.3 Influencing social norms through CCF project design

In this section we discuss how CCF project design influences social norms in both cultural and structural ways.

C.3.1 Descriptive social norms (the normal thing to do)

CCF projects have been successful in changing descriptive social norms if they were able to reach many people, thus helping to 'normalise' climate-friendly behaviour or ideas within a community (be that a community of place, identity or interest). In this regard, the key challenge for CCF projects has been to address everyone within their target community: all ages, genders and backgrounds.

C.3.1.1 Activities

One particularly effective strategy for reaching a diverse group of people is to run an equally diverse range of activities. The Accessible Town project does this particularly well. The project team is itself an amalgamation of three different organisations, running an array of different activities together and individually to cover a wide range of possible low-carbon behaviours: food, transport, travel, waste. This is particularly suited to the heterogeneity of the community at hand, which incorporates a large student population, many visitors and second-home owners and both very wealthy and relatively deprived permanent residents. People with different backgrounds and life circumstances are able to engage in different activities (e.g. students can't install insulation in a rented flat and generally don't own a car). Two of our other case studies (City Burgh and Island) are more specific in the domain they address (waste) but also run a variety of activities (skills workshops, swapshops, swapping sessions, schools programmes, public events, pop-up shops). Again, this allows them to reach a broader range of people than would attend a single type of activity.

However, two of our case study CCF projects employed an alternative strategy where they mainly focused on a single activity – a car club or home energy advice. In these cases, it was important to make this single activity as widely appealing as possible, to reach beyond the "usual suspects" or the natural audience for the activity. In fact, all of our projects talked about the importance of making their activities relevant, to make them address daily needs, to ensure that they were central, convenient and more useful or

[52] Martellozzo, F., Landholm, D. M. & Holsten, A. (2019). Upscaling from the grassroots: potential aggregate carbon reduction from community-based initiatives in Europe. *Regional Environmental Change,* 19: 953-966.

[53] Landholm, D. M., Holsten, A., Martellozzo, F., Reusser, D. E. & Kropp, J. P. (2018). Climate change mitigation potential of community-based initiatives in Europe. *Regional Environmenta Change*, 19:927-938.

[54] Moser, S. C. & Dilling, L. (eds.). (2007). *Creating a Climate for Change: Communicating Climate Change and Facilitating Social Change*, Cambridge, UK: Cambridge University Press, 549 pp.

cheaper than alternatives and to particularly ensure that the participation process was simple, easy to understand and on participants' terms. This increased the chances of the project's target behaviours spreading through imitation, changing what is normal in a community. We saw some evidence for this in one case study, where a Facebook group designed for exchanging goods and services, not directly linked to the project, saw increased activity and traffic over time, possibly indicating a strengthening norm of reuse and recirculation in the community.

C.3.1.2 Location and space

A project's main location is also important when reaching a diverse range of participants, but this is specific to the community's geographic layout. In one of our case studies, the project team reacted to the scattered, rural nature of their target community by opening eight "micro-shops" for their activities, so that no resident would have to travel further than four miles to participate. In a more urban case study, relocating the project's main premises to the local 'High Street' from an un-used side street meant that it could attract more passing foot traffic. Developing a distinctive brand for the outside also drew the attention of passers-by and made the premises stand out from the shops around it. In our Accessible Town case study, the project chose to embed its central hub space within a visitor attraction, while also having activities throughout the town. Aside from the practical advantages this offered to the food-growing parts of the project, this local institution provided a "neutral" ground, where a range of different parts of the community (students, families, retirees) could feel welcome.

An important factor for both the planned activities and their location is consistency over time. Building up descriptive social norms is much easier if community members know where to go to participate in project activities, particularly in the cases where the project is providing some infrastructure to support a behaviour – like a shop, shed, shared cars or a community garden. Knowing *when* to go to participate is just as important and is illustrated by projects organising regular events, e.g. monthly cycle breakfasts, bike repair cafes, weekly vegetable box collection point, and annual celebratory events. The effect of these regular events was often enhanced by offering some little incentive for people to linger when doing something functional, such as collecting (seasonal, locally grown) vegetables, or commuting to and from work, such as the chance to eat or share a recipe. Permanence and consistency could also help behaviours become more widely accepted as the organisation/project became known and to some extent trusted within the community.

C.3.1.3 Visibility within the community

In addition to having a range of activities and an accessible location, projects also tried to reach diverse participants by making themselves visible within the community. One common technique was to attend large public events such as multicultural festivals, harvest fairs, summer festivals, university freshers' weeks, family fundays, Christmas fairs, etc. Project teams attended these large events with a stall and leaflets and usually included some kind of demonstration or interactive display: pop-up swapshops, bicycle-powered smoothie makers, eBikes to try out, a pledge tree, a lightbulb demo, powerpoint slides, etc. Carrying out these activities at a popular public event allowed the projects to reach new people, who had not engaged with the project before. Our Accessible Town case study had also once set up stalls in the street to tell people who would not normally attend their events about the activities that they were trying to promote. This tactic of

going out to people can be seen in other behaviour change policy areas, such as public health, parenting and transport.[55, 56]

Project teams also attended smaller community events organised by other groups like coffee mornings, language school sessions, student society events, religious gatherings or school open days. Given that the attendees at these smaller events are less diverse than for large public events, the aim here was not so much to reach new people as to "piggy-back" on an existing audience, who might welcome something new or different.

Similarly, organising joint events with other local organisations, especially those with an environmental focus (such as reducing litter, cleaning beaches and waterways), allowed a mutually beneficial sharing of audiences and reinforcing of messages about behaviour and climate change impacts. Almost all of our case study projects also worked with local schools and found that this collaboration allowed them to reach not only the children and teachers, but their families too, who were generally of working age and too busy to attend other events. Other organisations that our case studies partnered with included older people's groups, welfare charities, churches, sports clubs and universities, thus attracting several people who had never previously thought about climate change. In our Island case study the CCF project linked with local tourism organisations who wanted to be more environmentally-friendly through for example, promoting the use of refillable water bottles.

C.3.1.4 Networks

Lastly, in terms of reaching as many people as possible, every single project relied to a greater or lesser extent on word of mouth and personal networks. Word of mouth in dispersed rural communities helps to involve people who might not otherwise be aware of a project's existence. Similarly in urban communities, word of mouth acts to draw people's attention to a project which could otherwise be easily lost amongst all the other things that are happening. In some communities, personal networks were key to reaching as many people as possible. For example, in one of our case studies, hiring a Polish project officer allowed many people from the Polish community to be reached.

Projects that had neither a space where people could meet, nor activities that encouraged social engagement, and did not organise regular events, found it harder to reach beyond their core interested group and be part of a network. However, even projects that did have a presence in the community often found it difficult to reach beyond the 'usual suspects'.

In some of our case studies social media was used very effectively to promote and normalise the behaviour supported by the project. One project in particular was responsible for setting up and maintaining an online platform for buying and selling of unwanted goods that had become the first resource for both items wanted and items for sale in this particular community. Another project used its own website to advertise events and activities so people knew what was happening each week. The potential for CCF projects to widen their presence within the community using social media is probably one that could be improved.

We note, of course, that a lack of infrastructure is a key barrier to the spread of some behaviours, regular cycling, for example. While our case study projects were not designed to change large-scale infrastructure, they nevertheless contributed to the

[55] Pykett, J., Jones, R. & Whitehead, M. (eds.) (2017). *Psychological Governance and Public Policy; Governing the mind, brain and behaviour*, Oxford: Routledge.

[56] Whitehead, M., Jones, R., Lilley, R., Pykett, J. & Howell, R. A. (2018). *Neuroliberalism: Behavioural Government in the Twenty-first Century*, Oxford, Routledge.

development of descriptive social norms by focusing on the other aspects of adopting behaviours: discover, interest, trial and learning. Thus, it could become normal in a community to have tried riding a bike, and to have the skills to do so, for example, despite the infrastructure still being insufficient for this to become a widely practised behaviour. We would still consider this a successful spreading of descriptive social norms.

C.3.2 Injunctive social norms (the right thing to do)

Injunctive social norms are based on a shared set of values around the 'right thing to do'. They exert a social pressure on people but, in contrast to descriptive social norms, they do not have to be acted on in order to exist. In such cases people are aware of the right thing to do (such as walking or cycling instead of driving) but do not necessarily do it. Projects were successful in changing injunctive social norms if they could **exert social pressure** on people or strengthen existing pressures.

The main way in which people feel social pressures is through group identity. In some case studies, this effect was particularly strong and created both challenges and opportunities for the project design. In the case study dealing with ethnic minority communities, emphasising the financial savings to be made by saving energy dovetailed well with existing injunctive social norms in the South Asian community. However, in the West African community, worrying about relatively small financial savings was more likely to be seen as petty and antithetical to prevalent notions of individual success. Similarly, in the Rural Town case study, some people could easily embrace the idea of not owning a car and driving less as it aligned with their existing identity of voluntary simplicity. Other people felt much more challenged by this idea as it clashed with notions of independence or the status afforded by having a large, powerful car. Similar dynamics played out in all of our case studies and highlighted the challenges posed by different group identities.

Our case study projects thus had two challenges. First, they sought to **strengthen** existing injunctive social norms where these values were aligned with the project (e.g. norms around not owning a car and driving less would align with a project's efforts to change transport behaviour). Second, they were trying to **weaken** or modify injunctive social norms that supported carbon intensive behaviours (e.g. the aspiration to own a large, powerful car).

One key tool for addressing both of these challenges simultaneously was to create supportive social environments where "the right thing to do" could be discussed in a group setting. Sometimes this was done in an organised way – e.g. the Carbon Conversations Schools programme – but usually it was facilitated by project team members during the normal activities of the project. Small group workshops were particularly suited to **helping people discuss** a wide range of behaviours beyond the project and what should be done to address the problem. However, project team members all emphasised that facilitating this kind of discussion was not easy and highlighted the importance of training (such as the Carbon Literacy training) and resources to support these conversations.

Another approach to shifting injunctive social norms, which has echoes of the "Common Cause" approach,[57] was to emphasise the environmental benefits of a behaviour, rather than the financial benefits. This is illustrated by a comment from one of the project team members in the City Burgh, arguing that they had reduced the stigma of 'second-hand' clothing by emphasising the carbon benefits. They said that this works because

[57] Crompton, T. (2010). *Common Cause: The Case for Working with Our Common Values*. Common Cause Foundation.

everyone wants to be more eco-friendly. This was done through the project's messaging, but also in the very design of the swapshop process. Clothes were swapped using a points system that was linked to the environmental impact of production and completely dissociated from their monetary value; i.e. semi-designer clothes were 'swapped' for the same points value as high street designs.

In a different case study, the project team argued that co-locating a variety of different activities fostered the transfer of injunctive social norms between different groups as noted in Figure 5.

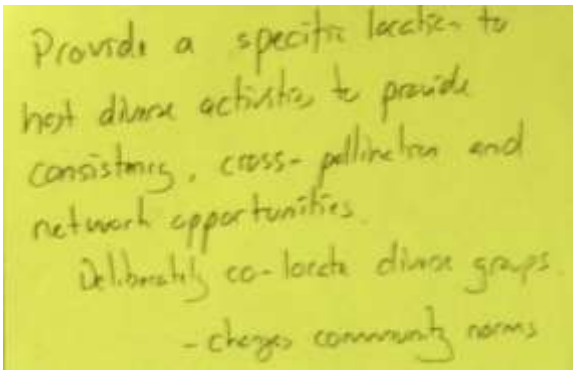

Figure 5: Participant comment about value of co-location of project activities. Transcription: Provide a specific location to host diverse activities to provide consistency, cross-pollination and network opportunities. Deliberately co-locate diverse groups – changes community norms.

The success of the transfer of norms via "osmosis" is still to be determined as it depends on the level of respect and trust between the groups that are sharing the space. The project is addressing this by actively developing common projects, shared by different groups.

Most of the case study projects emphasised the importance of leading by example. In our Rural Town transport-focused case study, the project team became visible advocates for sustainable transport options, taking the bus or the train, using the car club cars and cycling and walking in town. As well-known and respected members of their community, they hope that by acting in congruence with the values they are promoting, they can exert a disproportionate influence on their community's injunctive social norms. Another instance of leading by example is the City Burgh clothing reuse project. All of their shops were fitted out using reused and repurposed waste materials – "begged, borrowed and stolen" in their own words – thus demonstrating in practice the norms that they promote.

Another technique for strengthening existing injunctive social norms in the community is to encourage participants to make pledges. This allows community members to voluntarily affirm their commitment to particular actions and thereby intentionally increase the social pressure they feel to act in line with their values.[58] One case study ran an activity they called a "pledge tree" at a large Christmas fair, at which members of the public wrote their pledges on a cut-out handprint and then pinned them onto a tree.

[58] Literature on use of commitment is vast. See for example, Burn, S. M., Oskamp, S. (1986). Increasing community recycling with persuasive communication and public commitment. *Journal of Applied Social Psychology*, 16, 29-41; Lockhorst, A.M., Werner, C., Staats, H., van Dijk, E., Gale, J.L. (2011). Commitment and Behavior Change: A Meta-Analysis and Critical Review of Commitment-Making Strategies in Environmental Research. *Environment and Behaviour*, 45 (1): 3-34.

When working with partner organisations, our case study projects also had the opportunity to influence the values held within a community. In our Accessible Town case study, the close collaboration between three organisations with different aims, audiences and working cultures but a common environmental focus encouraged a mutual strengthening of environmental social norms as each one could learn from the others. Similarly, in our Rural Town case study, the CCF was enabling groups with diverse aims to work together, bringing a climate change awareness into their other activities which included economic development, improved mental health and addressing isolation. On our Island case study, a similar dynamic emerged between the project and other environmental organisations with whom they collaborated. The simple interaction with other people equally dedicated to environmental issues strengthened the social pressures felt by our team members to act out their values and lead by example.

CCF projects that raise awareness of the right thing to do, but then are unable to create the conditions for this to happen, could be in danger of raising expectations and even inducing anxiety among participants whose knowledge is increased but who are unable to act on it. It is thus a delicate balance for community-based projects to tread a line between encouraging behaviour change that individuals and households can accomplish, and which helps strengthen communities, and raising awareness of the scale of change needed but that is perhaps beyond the scope of individuals, households and communities.

C.4 Conclusions and reflections

This appendix reports on the ways in which climate change engagement can be achieved. The results presented show that there are many lessons to be learned to improve the ways in which CCF projects engage their communities in climate change. Some of the key things our case study projects were doing to foster adoption of low-carbon behaviour and build community capacity include:

- Making themselves and their activities visible and known in the community.
- Running a diverse programme of activities and/or making their activities as widely appealing as possible.
- Appealing to a range of different motivations for engaging in their behaviours.
- Creating safe, fun and interesting environments where people could enjoy trying new behaviours and discussing new ideas.
- Training project staff and volunteers so that they were confident communicating about climate change in a variety of ways.
- Leading by example.

It is important to note, that from a CCF project team's perspective, a single activity would always be delivering on multiple elements of climate change engagement. Likewise, a single element of climate change engagement would always be delivered by multiple activities. Breaking it down, as this appendix has done, is not how climate change engagement works in practice and is only useful for drawing out wider lessons.

Another important point is that project teams were engaging their participants in a range of ways. Sometimes they ran active, formal engagements, specifically designed to directly address participants knowledge or behaviour. Yet, they also engaged with participants in passive, informal ways, where their influence was more indirect. It was clear that the skill and creativity of the case studies' staff teams came to the fore when choosing when each type of approach was called for and how they could be combined for effective engagement.

This relates to the tension that project teams felt about the relative merits of appealing to existing, non-climate-related motivations for exploring a new behaviour (financial, health, social) versus the attempt to influence participants' value framework to take climate change into account more explicitly. It is clear that project teams used both approaches in different situations. What our findings suggest is that a trained and skilled project team[59] can decide when explicit (active/formal/direct) inclusion of climate change messages is appropriate, and when a less explicit (passive/informal/indirect) approach would engage participants better, depending on the context.[60] This is an important answer to policymaker and stakeholder concerns about whether CCF project teams are being explicit enough about climate change messages.

[59] Having taken the "Carbon Literacy for Communities" training, for example.

[60] This idea of tailoring activities and approaches to the community is explored in more detail in Section 5 Making the most of the CCF's community focus.

Appendix D Monitoring and reporting CCF impact

In an era of evidence-based policy-making and tight control over government budgets, the question of how to evaluate the success[61] or impact of a government policy is of crucial importance. Historically, the focus of the CCF's reporting mechanisms has been on the carbon emissions reductions achieved by the funded projects. More recently, an additional focus on Climate/Carbon Literacy has emerged. Understanding how to monitor and report on this in a robust way has proved difficult. Addressing this difficulty is one of the drivers for this research project.

In this appendix, we look at what we can learn from how projects are currently monitoring and reporting their impacts to the funder.[62] We then consider the evidence as to whether and how the Climate Change Engagement framework[63] might be adopted for use by the CCF programme.

D.1 How did the case study projects monitor their impact on their community?

During the reflective workshops, the project teams from each case study identified various ways in which they monitored their own success. These efforts were both quantitative and qualitative. Some of these methods were carried out in order to provide data for the projects' required quarterly progress reports, but the teams also saw inherent value in trying to evaluate how well they were doing.

D.1.1 Counting as they went

Project teams used a variety of quantitative indicators to assess their own success. The Island case study maintained a membership database that helped it realise the project was directly reaching around 13% of its island's population. The City Centre CCF project gave home energy advice and provided households with electricity consumption monitors thereby having a known set of households reached. The Rural Town case study, running the car-sharing scheme, collected usage statistics (such as mileage) via partner organisation and by collecting information itself. Similarly, the Accessible Town CCF case study project ran a bike pool, where usage could also be counted easily. The City Burgh case study which ran swapshops was able to collect a wide range of usage statistics because each participant was issued with a membership card, allowing the project to track individual behaviour. It is clear from these examples that while not all activities lend themselves to the collection of quantitative data, projects took advantage of this when they could.

D.1.2 Surveys

Case study projects also ran surveys after events. This was easiest to do after structured workshop activities. Sometimes this captured details that would otherwise have passed unnoticed:

[61] As noted previously, indicators for success can vary from one project to another, and between projects and funders. In this report we use success broadly to encompass the effectiveness and impacts of CCF projects rather than in a tightly defined way against any indicators.

[62] As part of this research, we also considered how the data collection methods used by this research might be adapted for future use to examine individual- and community-scale impact by project managers, funders or in subsequent research efforts. This is detailed in Appendix I (How did the researchers assess project impact?).

[63] Presented in Section 3 (Understanding climate change engagement: our framework) and Appendix A (Climate Change Engagement framework).

> *[W]when you're reading the feedback forms after, you think maybe it's a throwaway comment […], but they've picked up on it 5 weeks later.* (Team Member, workshop, Accessible Town case study CCF project)

The Island case study also noted a side benefit of conducting their travel surveys, in that it could trigger interesting conversations between participants. However, surveys also have disadvantages. In order to get useful data, they must be well designed and administered consistently if one wants to gain a sense of 'change over time''. Getting "before" and "after" responses from the same participant was mentioned as being particularly challenging. Additionally, the responses then need to be processed and analysed which can be a significant burden on staff. These challenges were recognised by the project teams:

> ***Project Manager:*** *Actually we have tried to develop the questionnaires, general questionnaires, and we have already asked 100 participants, so far how many have we received a reply?*
>
> ***Outreach Worker 1****: One, two! […]*
>
> ***Project Manager****: If we go ourselves in the home, probably we can get a... But it's again very difficult. We need to have time and discussions. […]*
>
> ***Outreach Worker 2****: Yeah you need to just go there with a piece of paper and take that piece of paper with you. That's the only way you can get it.* (workshop, City Centre case study CCF project)

Here, a project team reflect on the lack of response they received to their participant surveys and on the amount of time and effort that would be required to increase their response rate. Despite these types of difficulties, all case study projects used surveys to a greater or lesser extent.

Potential solutions we have identified to the time constraints for implementing survey include:

- Careful consideration of the activity's desired outcomes to design a well-targeted and short survey instrument. In some cases, such as a skillsharing workshop, just the number of attendees could be enough.
- Surveys employed at key points. For activities such as stalls at village fairs it is unlikely that anything other than general awareness of the project will be achieved, and therefore surveys may not be needed. To capture how these events direct people to attend more formal events (e.g. skillsharing workshop or visit to swap shop) surveys at those events may include a question about previous engagement with the project.
- To reduce the need for pre- and post-involvement surveys, questions which ask how a specific activity has influenced behaviour can be used. Although this is unlikely to be as accurate as a pre-post survey, it is significantly easier to administer.

D.1.3 Personal observations

A third source of evidence that project teams relied on to assess progress was their own personal observations:

> *The sense, the sense is it's all going in the right direction…Just a general feeling but it's going well.* (Board Member, workshop, Rural Town case study CCF project)

> ***Volunteer**: We had one of the teachers involved at the beginning of the project, her views on […] recycling clothes, swapping clothes were fairly negative…But by the end of the block she was really excited about it […]*
>
> ***Education Outreach Officer**: […] I was telling the guys before we went in, I said right okay I've met the teachers, and one of them is pretty negative about… didn't really understand the concept and she actually said 'och I wouldn't wear someone else's shoes'. […] And by the end she completely changed her –*
>
> ***Volunteer**: Totally! She was so excited about it, speaking about it afterwards, her energy was really high […]. She was really happy, she was giving a lot of positives.* (workshop, City Burgh case study CCF project)
>
> *My two Chinese ladies came in not knowing what climate change meant. And at the end they had a much stronger sense of [it] .* (Skillshare Coordinator, workshop, Accessible Town case study CCF project)

These quotes illustrate two different types of observation. In the first quote, the board member has a general sense that things are going well and progressing. The other quotes show how a specific anecdote provided direct feedback that the CCF project was making an impact.

D.1.4 Challenges of self-assessing impact

Despite the range of approaches to assessment that the CCF case study projects were using to understand progress and impact, project teams still expressed uncertainty over the influence they were having on their target community:

> *You know because sometimes we're all that busy that we do something, we think it's been a success or we don't think it's been a success when actually the opposite is true. You know what I mean? So you think that was great, I did a really good job in discussing that, then somebody comes back and thinks that was absolutely rubbish. (Project Manager, workshop, Rural Town case study* CCF project*)*
>
> Y*ou know yourself, people will come in to us and tell us all the great things. 'Oh this shop's amazing' and when you actually go out to the majority of the people you get the real truth.* (Project Manager, workshop, City Burgh case study CCF project)

These two quotes illustrate how project team members were not always sure whether they were having an impact. Similarly, there is a recognition that when speaking to project participants face-to-face, project team members are likely only receiving positive feedback. Thus, project team members are mindful of the partial, potentially one-sided picture that a project team has of a project's impact. Surveys may be able to offer a bit more honesty but even a survey suffers from self-selection; it is often difficult to reach people who are not engaged in the project. The result of this conundrum would be to generally over-estimate the impact of the project if the data collected was extended across the whole population, and not taken as a snapshot of participants.

In addition to this general source of subjectivity, within a single CCF project team each individual will have a different sense of the project's impact due to being involved in different activities. In the Accessible Town case study CCF project, some members of the team at the second workshop had not yet actually met each other as they worked on completely different parts of a very large and multi-stranded project. For the Island project, the geographic isolation of the different community micro-shops meant that project staff had very different experiences of the project. In the two urban projects, different staff members had different roles within the team and therefore had different assessments of the impact they were having.

Another complicating factor is that there were differing definitions of success:

> *We look at it from all the aspects, […] we look at it from an economic impact, we look at it from a climate impact, we look at it from risk factors, from the Trust's point of view, but we'll look at it as all the benefits to the community and beyond in terms of a project. (*stakeholder interviewee, Rural Town case study CCF project*)*

This quote comes from a Board Member for the organisation hosting the CCF project. From their perspective, the climate impact of the project – the reason that the project had received funding – was only one aspect of the project's success.[64]

Finally, project teams found it difficult to assess their success because of a lack of comparators:

> *So, it would probably be good if we got together with similar organisations and had a discussion about how you could benefit from doing what they've done or learn from their mistakes and that type of thing. (*Outreach Worker, workshop, City Centre case study CCF project*)*

This quote illustrates how project teams would like the opportunity to learn from other projects and compare experiences. This would enhance not only their ability to deliver their projects, but also to judge the impact they are having.

D.2 How did the case study projects report their impact?

One of the key challenges faced by the CCF throughout its history is how to demonstrate the impact it is having, a necessity when spending public money. A decision was made very early in the fund's history that CCF projects should report impact in terms of greenhouse gas emissions reductions. This entailed the development of clear methodologies to quantify these emissions savings as well as implementing a training programme to support project teams in collecting the necessary data and analysing it.

In addition to this focus on emissions reductions, the CCF has always, by definition, had a community element; thus, projects have been required to report on "community outcomes" as well. However, the methodology for assessing these outcomes has not seen as much development work. The full history of the CCF's reporting procedures, as well as the various critiques of the strong focus on emissions reductions, can be traced through the previous reviews of the CCF. Indeed, this research was designed to address some of the outstanding issues identified in these previous reviews.

The application and reporting processes have been administered by Keep Scotland Beautiful (KSB) on the Scottish Government's behalf since the CCF's inception in 2008. Within the KSB team, Development Officers act as contact points for a group of CCF projects, dealing with financial issues as well as receiving the progress reports and providing feedback on them. In addition, some KSB staff are employed to provide support and training to funded projects as well as to groups seeking to develop a funding bid. One key piece of support that was new in the 2017-2018 funding round was the "Carbon Literacy for Communities" training, which was compulsory for all funded project

[64] For a discussion about how the different case study projects either adopted the CCF definition of success or alternatively had their own definition of success and used the CCF grant to help to achieve this, see Appendix H (Making the most of the CCF's community focus), specifically Section H.2.6 "Clarity of vision".

managers. This reflected the increased focus on the Carbon/Climate Literacy aspect of the CCF and formed part of the co-development phase of this research.[65]

D.2.1 Indicators used in reports to the CCF

In this section, we review the case studies' progress reports and final reports to identify how projects currently meetthe reporting requirements.

Specifically, during the 2017-2018 CCF cycle, the following reporting processes were in place. All funded projects had to self-identify a number of quantifiable objectives they intended to meet during the funding period. These were in two categories: i) Carbon emissions reductions, and ii) Community outcomes. The application form asked projects to "list the indicators you are using to report against each outcome to show progress against each one". Funding applications were assessed on how these objectives fit the CCF criteria,[66] and the ability of a project to meet these objectives through their proposed activities. Once projects received their funding, they reported progress towards these objectives in one start-up report and three further quarterly reports,[67] summed up by a final report at the end of the 12-month period. Final reports either followed a template provided by CCF or used a more visually appealing format that could be used as a public-facing document.

The reporting process asks projects to detail the CO_{2e} emissions reductions achieved through their activities using an agreed methodology.[68] The process by which community outcomes were to be assessed was not so tightly defined. The indicators chosen by projects in the CO_{2e} and Community categories are summarised in Table 3. The two right-most columns show the research team's assessment of which types of indicators might yield the most robust results compared to effort.

[65] The relationship between the developing focus on Carbon/Climate Literacy, in addition to carbon emissions, and this research is explained in detail in Appendix A (Climate Change Engagement framework).

[66] In 2017/18, the four criteria were: Community; Carbon; Legacy; Climate Literacy. Note that in 2019, the "Climate Literacy" component was moved to second place. For comments on these criteria, based on our research findings, see Appendix G (Commentary on current CCF funding criteria).

[67] Earlier iterations of the CCF required monthly progress reports. The frequency was reduced to quarterly to ease the administrative burden of reporting on a monthly basis. Monthly reports were often not providing a substantive update on the previous month's report.

[68] In simple terms, projects must quantify an impact they are having in their community and then multiply that by an appropriate emissions factor, which is either provided by KSB or independently researched by the project.

Table 3: Impact measurements as reported by five case study CCF projects to the CCF programme administrators, including an assessment by the research team of the associated effort for data collection and the usefulness of the information. (Effort A: Low, limited extra data collected, C: High effort, requires dedicated information collection and analysis. Usefulness of Information 1: Low, provides only basic information, 3: High, provides detailed information or information through time.)

Indicator	Number of projects reporting this indicator	Effort to collect data	Usefulness of Information
CO_{2e}			
CO_{2e} emissions (energy savings)	3	B	3
CO_{2e} emissions (behaviour change)	2	B	3
CO_{2e} emissions (alternative production/reuse)	3	B	3
Weight of items received/produced	2	A	3
Behaviour change diaries	1	C	3
Narrative comments from participants	2	B	3
Community			
Behaviour change diaries	1	C	3
Narrative comments from participants	2	B	3
Number of participants (informative)	4	A	1
Number participants (skillsharing)	2	A	2
Number of events	3	A	1
Number of energy saving devices given out/repaired	2	A	1
Membership	2	1	1

There is often a trade-off between the effort required to collect the data and the usefulness of the data received (Table 2). This trade-off is particularly important to consider when projects are reliant on volunteer support and are working on fixed timescales and budgets, as is typical of a CCF project. It is important that any reporting framework is flexible to account for varied objectives across different projects (e.g. type of activities) and allows for projects with varied resources to report as is most appropriate.

D.2.1.1 Indicators for CO2e emissions reductions

Given the support and guidance available to projects, CO_{2e} emissions' reductions were the most frequently and robustly reported impact metric across projects, although individual projects vary in the precision with which CO_{2e} emissions reductions were reported. This variation in reporting is primarily because some activities are easier to monitor numerically than others.

In general, CO_{2e} emissions reductions were direct outcomes of the project activities, e.g. use of electric cars instead of petrol or volume of textiles diverted from landfill. However, for some activities, such as reductions in travel distance to community hubs in our Island

case study, CO_{2e} reductions were less directly relevant to the activities being undertaken as part of the funded project. This is a good example of a "disconnected measure", where the chosen indicator does not really monitor the main activity of the project.

D.2.1.2 Indicators for community outcomes

Unlike CO_{2e} emissions reductions, the reporting on community outcomes was less systematic because there was no uniform methodology within the quarterly reports. Most projects simply reported the number of events run, or the number of participants attending or taking part in various activities. Measuring numbers of participants or numbers of events held is the simplest form of impact reporting carried out by the projects. Although this provides only basic information (i.e. only presence, not success of learning information/skills), such information may be valuable for events such as skills sharing, where trialling of a behaviour is the intended outcome of the event. Monitoring attendance is also important for projects to understand which events have been the most popular and had a wide reach.

To report in more depth on community outcomes and cover changes in climate change knowledge, several of the final reports included surveys of how different activities contributed to changes in understanding or behaviour. Table 2 also highlights that diaries were an effective way for projects to track both social change and changes in CO_{2e} emissions, although effort for collecting and analysing these is very high. For that reason, narrative comments from participants may be a more appropriate way to record social change.

D.2.1.3 Tracking change over time

It is clear from the comparisons between the quarterly reports and the final reports that measurable changes in the indicators were rarely achieved at the three-month stage. Only the final reports really addressed the longer-term impacts that projects were having. This was done using narrative reporting to show how individuals moved through different activities, and how this impacted understanding or behaviour. Bike travel diaries are a good example of this. However, this is labour intensive and only useful for very engaged participants. Where possible, projects also used monitoring technologies, for example by providing households with an energy monitor that could be used to track the longer-term impact of home energy visits. Time series monitoring of donations or use of a service were also used to report longer-term impacts and changes at a aggregate, rather than individual, level.

Potential ways to better report change over time in the future include:

- Designing a reporting strategy that builds towards recognising change on an annual, or even multi-year, time frame could help to ensure that projects do not get disheartened by seemingly small impacts in short term reports, while maintaining the ability to monitor progress over time to funders. Quarterly reports could be seen more as tracking what projects are doing to measure impact, rather than a measure of impact themselves.
- A 'live' reporting document, where figures are entered alongside the previous reports' figures showing progress through time might be one way to achieve this, with final analysis done annually.
- Baseline data are important for recognising impact, but hard to collect in a single year project. Additional time at the beginning of the project to collect these types of data could be beneficial.

D.2.2 Research participants' comments on the current reporting process and content

In addition to reviewing the case study projects' written reports, we also collected direct feedback about the existing way of reporting, predominantly during the third workshop with the core project teams. Their comments focused both on the process, i.e. how the reporting was organised, and on the content of the reports, i.e. the perceived focus on carbon emissions.

D.2.2.1 Comments on reporting process

With regards to reporting, our findings suggest that it would be beneficial to have a more collaborative reporting process, to have face-to-face feedback from CCF development officers, and to try to reduce the overall reporting burden.

Progress reports are generally completed by one person, or a limited portion of the overall project team. In several of our case studies, it was only the project managers who completed the quarterly progress reports. While this is not inherent in the way the reporting is designed, project managers were usually reasonably well-placed to provide an overview of the entire project. This was sometimes seen as a limitation, or a burden, as a comment from one of the workshops shows:

> *The biggest difference for me is it's just me doing the quarterly report, so this reflective workshop [done as part of the research] is…one of the great things is, it brings…other people's thoughts, experiences, opinions into the process so it's not just me that's contributing.* (Project Manager, workshop, Rural Town case study CCF project)

Project teams received varying levels and type of written feedback from their CCF development officers. The City Centre case study received some feedback, but this mainly focused on data collection. The Island case study received more detailed feedback, providing suggestions to help the project address challenges that they reported. The City Burgh case study received some feedback but also felt that it could be more. Comments provided by project teams expressed in the third reflective workshop thought that face-to-face feedback would have significant advantages:

> *I found [the research workshops], because you were getting a visit and you wanted to have something to say at the meeting and things like that, you were very driven to the next meeting sort of thing*. (Manager, workshop, City Burgh case study CCF project)

> *I think if it was somebody from the CCF it would be taken like more seriously, as more of an incentive, somebody is coming from the mainland, they're going out of their way to come and sit down and chat to us and listen to us about what we've been doing. I think that would make people bother a little bit more about it.* (Hub Manager, workshop, Island case study CCF project)

In the first quote, the project manager describes the feelings felt by the team in relation to the research workshops and is comparing them to the feelings engendered by the feedback from the development officer, stressing that the face-to-face visit from the researchers provided a strong drive to achieve things. The second quote, from a different case study, corroborates this experience.

In discussing this further with the City Burgh case study, they raised an important point regarding the distinction between auditing and supporting projects:

> ***Interviewer:*** *I'm just wondering which one at the moment you think might be better, would it be better to focus [in person visits] on more established projects,*

> *that kind of know what they're doing, or would it be better to kind of get the first year projects and kind of –*
>
> ***Project Manager**: I suppose it depends on what the outcome of them coming out is. Is it to develop or is it to support you know, and I suppose it would be different for different projects and things like that.* (workshop, City Burgh case study CCF project)

This exchange highlights a key issue in designing a reporting process, i.e. the purpose should be clear. The workshops in general highlighted that if project teams are unclear whether the information they provide is the basis for supportive feedback or an assessment audit, then they will find the reporting process more difficult.

Finally, community stakeholders external to the project teams were critical of the CCF reporting process as a whole:

> *Having such a heavy burden on funding which can support projects is just – unrealistic, it's just like – you try to do good but at the same time you are putting such a burden on people who are already totally stretched and who are doing it for the good of the people. And I think that is really one aspect of the CCF that actually scares quite a lot of smaller groups who could really be - who could benefit from having this fund who go, 'actually it's just too much, I'm not going to do it.'* (stakeholder interviewee, City Burgh case study CCF project)
>
> *Count the children's smiles [...] There are intangibles here […] it's the idea of the... the sum of the parts is actually more than the individuals. […] in fact, charities get scrutinised to the hilt and I keep thinking if they scrutinised big businesses like they scrutinise charities, we'd be living in the perfect world!* (stakeholder interviewee, Accessible Town case study CCF project)

The first quote points out that the reporting process for the CCF is seen as particularly burdensome. The second quote, from a different case study, agrees, suggesting that the reporting does not capture the more 'intangible' aspects of the CCF. These quotes suggest that it would be important to reduce the reporting burden placed on CCF projects and to design the process to meet their needs.

Comments on the current focus on carbon emissions

As well as commenting on the reporting process, the project teams also commented on the content asked for in the reports, specifically the focus on carbon emissions. The key issues identified are that carbon emissions are seen as a "disconnected measure" and that this might push projects towards activities that deliver carbon savings rather than those that engage their community with climate change. Stakeholders additionally point out that some community groups may be discouraged from applying due to the focus on carbon emissions, a concept requiring a high level of numeracy to put an application together.

The first concern is illustrated by a particularly rich discussion with the Accessible Town case study in the third reflective workshop:

> ***Coordinator:** Our final report is going to be judged on our carbon savings, our bid was very much judged on carbon savings per pound, […] and therefore that's why projects tend to lose some of that other focus […]*
>
> ***Project Facilitator:** That's right because the CCF needs something measurable but it's a derived measure, …the outcome is behaviour or community change, [but] the measure is carbon. It's a disconnected measure […]*

> ***Coordinator:*** *Well that's basically what I think is wrong with the reporting - it doesn't pick up those major shifts because the reporting is still very focused on the actual carbon reduction. That might be our fault for the way we're writing the reports […] But I think that type of weighting of, sort of… the person and the journey and the information is very significant.*
>
> ***Project Facilitator:*** *I can give you an example, so actually and this is deliberate in terms of how our project was written, we're getting a lot of carbon saving from composting, it is a big programme because we're a big garden right? But the number of people that's actually changing any behaviour for is very limited because we do it and we know it works and it's something that's great for us and t has no downside, and we run workshops and classes around it. But it doesn't impact a huge number of people and when it does it's more about "this is how you can compost at home" […] and so it's quite limited. Whereas I feel some of the conversations you have… Particularly, you might run a chocolate workshop [skillshare] which counts for…on the CCF scale for –*
>
> ***Coordinator:*** *Zero.*
>
> ***Project Facilitator:*** *But you've been having a conversation with people that actually have the potential to completely change their approach and it also builds a diverse community, and it brings people in to the conversation who we have no ability to bring in any other way. I think that has huge value to CCF's objectives but it's going down as nothing and that's the core of the issue that it doesn't measure the behaviour and it doesn't measure the long term impact. It just measures our composting is great for the CCF report. But I mean I'd be the first to say how many people does that affect, a few dozen?* (workshop, Accessible town case study CCF project)

In the first part of this interchange, the project managers argue that the CCF measurement (carbon emissions) is not aligned with their intended outcome (behaviour or community change) and call it a "disconnected measure". They illustrate this well in the following comments, explaining how the composting that they are doing generates very large carbon savings but has little community impact whereas the skillshares have a large impact on the community's behaviours and norms in relation to climate change but no directly measurable carbon savings.

What is clear from this interchange is that the projects' perception is that carbon savings are being prioritised in the reporting process. This emphasis on carbon savings results in projects prioritising carbon reductions to the detriment of their other climate-related outcomes that cannot be directly translated into carbon. An example of this is knowledge increases:

> *At times the project swings towards getting the carbon savings […] And I know they have to have something they can measure but being so focused on that at times actually drives not just our project but a lot of other projects… drives the project one way, when for the long term and for impact, projects may be better swinging more the other way. And in real terms it could be that the projects don't get refunded because they have a really high knowledge increase but an absolutely zero measurable carbon saving*. (Coordinator, workshop, Accessible Town case study CCF project)

Several stakeholders were also critical of the focus on carbon emissions:

> *[CCF]'s a really intimidating fund to apply for because as soon as you start thinking about calculation of your carbon footprint, you just go, 'oh, I was really bad in maths!' There's a lot of groups out there who do the same amount of work as we do and who really don't understand it and feel really kind of... this is just -*

> *it's not for me, I don't understand the language. It's too intimidating, it's too big and yet we'd benefit tremendously because we already do things that impact climate change.* (stakeholder interviewee, City Burgh case study CCF project)
>
> *Carbon is a total abstract concept to everybody and nobody really wants to know about carbon. Yeah, [they] understand carbon gases, but that's not an issue for them on a day-to-day basis.* (stakeholder interviewee 1, City Centre case study)
>
> *By the way, I'm not a fan of carbon accounting. […] Carbon accounting justifies keeping it. […] We need carbon eradication. […] demand destruction is the term I use rather than carbon accounting.* (stakeholder interviewee 2, City Centre case study CCF project)

The critiques from the stakeholders are varied, but similar in their concern regarding the CCF's emphasis on reporting carbon savings. The first quote argues that this requires a high level of numeracy suggesting this makes it an intimidating funding mechanism for some groups. The second quote argues that carbon is an abstract concept that does not resonate as a measure of success with community members. The third comment argues that the language of carbon accounting (and possibly by extension the term "carbon savings") is not strong enough and does not communicate the full scale of the decarbonisation challenge.

D.3 Could projects report on climate change engagement?

In this section we discuss whether the CCF programme could benefit from asking projects to report on the different elements of the Climate Change Engagement framework, namely the different components within behaviour, knowledge and social norms. We also consider how projects might do so. We draw on insights from the reflective workshops and our own review of the projects' progress reports and final reports.

D.3.1 Advantages identified by research participants

All five case studies saw some advantages to using the Climate Change Engagement framework, in terms of structuring their activities and adding value to their reporting.

The first two quotes come from the waste-focused projects and show how they could use the structure provided by the framework to reflect on their various activities and how the different elements (behaviours, knowledge, social norms) might allow them to reshape their project:

> *I think that would be very valuable to be able to structure it like that […] like knowledge…we need to educate people, then change their behaviour, then change social norms whatever. […] I think it would be more effective because as soon as we realised that it was about the knowledge and the way to get people to increase their knowledge on climate change was through films, through information on our social media, that's when our project really took a turn for the better.* (Project Manager, workshop, Island case study CCF project)
>
> *I think a lot of your […] activities will overlap into those three areas [of the framework] but it really gives you more of a sense of why you're doing each activity because you think 'well it slots into that and that slots into that'. And I mean for instance, our swap shops changed behaviours but it also changes […] social norms as well but then you could start to focus [on] 'well what does it change most' and 'how do we make…' so you can start to unpick it and change the way you deliver the service to make sure it's fitting and it's meeting …what it's meant to do.* (Project Manager, City Burgh case study CCF project)

The teams also discussed how the Climate Change Engagement framework could add value to their existing reporting:

> *If all your reporting is "I've saved 24 kilogrammes of carbon, CO_2 equivalent", how did you do that, how did you engage? And for me it seems that the whole… this year's reporting has been all about the CO_2 equivalent saved, rather than about the engagement.* (Project Manager, workshop, Rural Town case study CCF project)

> *The [carbon] data only represents a short…period of time, it doesn't tell you anything about long term ahead thinking for people you know changing their behaviour towards the environment because the data says such and such number of kilogrammes you've saved, it doesn't tell you anything about what's going to happen tomorrow if these people still carry on like that, or if they just finish the project and forget about the whole thing.* (Outreach Worker, workshop, City Centre case study CCF project)

> *I mean I know they talk about lifetime changes but everything is focused on what change have you made during the project? But actually, it's the climate change engagement and the taking the people through the journey that has the most long-term advantages. And that's about changing social norms an'all.* (Coordinator, workshop, Accessible Town case study CCF project)

The first quote explains how the new framework encourages projects to think about the process of community engagement, adding richness and context to the single figure of tonnes of carbon saved. The next two quotes argue that looking at the different elements of the Climate Change Engagement framework can also provide some insight as to whether the changes effected by the projects would have any longevity.

D.3.2 Potential implications identified by research participants

The project teams also commented on the potential implications if the CCF were to incorporate elements from the Climate Change Engagement framework into its reporting structure.

The main thing that the project teams pointed out was that the elements within the Climate Change Engagement Framework would be very difficult to quantify:

> *You can't quantify conversations that you have with people, which is what we're having when […] we're spreading that knowledge.* (Project Manager, workshop, Island case study CCF project)

This next quote from the City Burgh case study illustrates the common demand from project teams for guidelines and examples to explain the elements of the Climate Change Engagement framework and how it should be measured.

> ***Interviewer**: So I mean we've been working with you for 6 months now or so, and is it clear to you what we mean individually by behaviours, by knowledge, and then by social norms?*
>
> ***Education Outreach Officer:** It was when you explained it but at the very start…because some of them sounded quite similar, and it was differentiating 'okay so what does that mean' and I think it needs to be explained, giving examples or whatever.* (workshop, City Burgh case study CCF project)

Despite their clear call for guidance and support, the project teams also had some suggestions as to how projects could try to monitor climate change engagement with a more qualitative or narrative approach:

> ***Outreach Worker:*** *More descriptive rather than quantitative, that would make you an indicator of this. […] It obviously requires a completely different approach because it's a different tool and that's probably more difficult to obtain.*
>
> ***Community Champion****: Definitely qualitative methods type of thing. […]*
>
> ***Outreach worker****: Yeah. Tools to develop. Kind of qualitative analysis. Focus group discussions or interviews* (workshop, City Centre case study CCF project)
>
> *It's difficult if you're starting from scratch but you could have structured focus group style feedback sessions at stages throughout the project where you took a group of participants and assessed their progress. Now that doesn't tie the numbers down, that is looking at attitudes and approaches […] If we take a snapshot of people has there been a change in behaviour, and knowledge, and community norm over the life of the project? I think one of the challenges is that […] it's always going to be that subset who are engaged because you've got that longitudinal nature of the study.* (Project Facilitator, workshop, Accessible Town case study CCF project)

Project teams noted how interviews or focus groups might provide that type of data. But they also realised that this kind of monitoring would struggle to reach less engaged parts of their target community.[69]

Several projects mentioned how they were already trying to monitor and report on the "climate literacy" element of the current reporting structure. The Accessible Town case study identified three approaches that they were using to monitor elements related to climate change engagement. Firstly, they counted numbers of people who have attended events. Secondly, they collected anecdotal evidence of behaviour changes. Thirdly, they administered small surveys asking people to self-evaluate themselves on a variety of aspects before and after they participated in an activity. These are all examples of ways in which the different elements of climate change engagement – social norms, behaviours and knowledge, respectively – could be monitored.

The Island case study illustrates their effort to collect some data as follows:

> *The way that we're quantifying our conversations from our film night on Sunday, […] we were like "please just write it all down". […] I think we had three different subjects, it was what concerns you the most? A lot of people said the future of my children […]. And then what needs to change on [the Island]? And there was a real influx about things that need to change on [the Island]. And then what are you going to do personally as a result of seeing this film? So that's how we split it up and I have all the feedback.* (Project Manager, workshop, Island case study CCF project)

Asking participants for written feedback on an activity could also be an approach to monitoring changes. The questions asked in this case would relate to aspects of knowledge and behaviour in our Climate Change Engagement framework. With more guidance, projects could easily implement more targeted questions to assess change in a structured way.

However, relying on descriptive monitoring, has some risks, as expressed by this stakeholder:

> *But do you know, I could like [a] project and I could easily write a report which shows it in glowing terms. Conversely, using the same data, I could make it read terrible. What's the reality? And I guess we've all done it, you write the storyline to*

[69] This may not be a problem. Our findings suggest that the less engaged parts of the community will be less impacted by the CCF project anyway.

create the narrative, to support the narrative you're trying to get across. Is it right? (stakeholder interviewee, City Centre case study CCF project)

This stakeholder expresses some concern about the degree to which narrative reports can be written to express one viewpoint or another, based on the same underlying data. We agree that this is a valid concern. In order to address it, we suggest that providing a clear reporting structure, in which projects would have to address every aspect of climate change engagement would support transparency. Moreover, it is important to recognise that the purpose of the reporting, the identity of the organisation receiving the report and the nature of the feedback the projects receive will all affect the projects' desire to paint themselves in a good light. If projects feel audited, rather than supported, they will be less open about their challenges.

D.3.3 Relevance of currently reported impact measures to climate change engagement framework

In addition to asking project teams at the reflective workshops whether they would be able to report on the different elements of climate change engagement, the researchers also independently assessed the impact measures that projects are currently including in their reports to see whether they fit into the new framework (Figure 6).

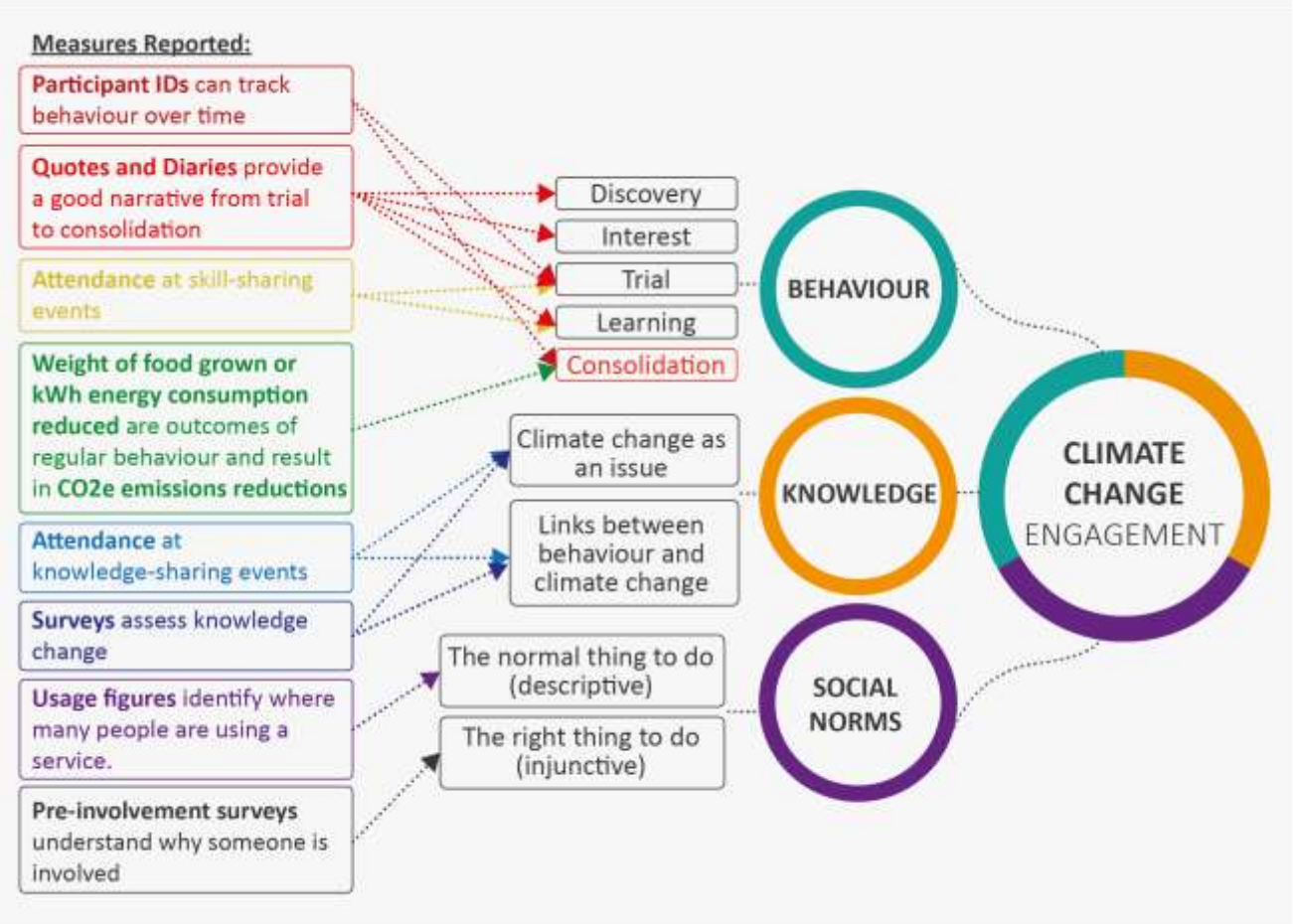

Figure 6: Impacts included in case study CCF project's progress and final reports in relation to the elements in the Climate Change Engagement framework.

Overall, the projects, using various metrics, already reported impacts that can be mapped onto all areas of the Climate Change Engagement framework although no single project considered all aspects at once. They additionally were already using a

range of metrics that allowed for such capture. The outcomes of behaviour change are the most frequently, and robustly, measured impacts, most often through calculating reductions in CO_{2e} emissions. The most evident challenge for reporting remains in following the impact of a project through all components of the framework.

Some impact assessments were able to span multiple components in the Climate Change Engagement framework, most often in relation to the 'trial' through to 'consolidation' components of behaviour change. The travel diary (used by the City Centre case study) provided the opportunity to track the progress of the use of bikes as alternative transport to cars, and allowed the project to recognise most participants would need additional assistance to move from 'learning' to 'consolidation' stages. Monitoring undertaken by the City Burgh and the Accessible Town case studies of an individual's use of a service (i.e. swapshop or tool share respectively) may also indicate movement towards behaviour consolidation. Other impact measures, such as the monitoring of energy use through smart meters, may be able to follow behaviour changes. However, this is unlikely to be achieved in a single year due to the seasonality of Scottish weather.

Social norms were not explicitly measured in any project. They can, however, be inferred from some measures. Records of membership (in the City Burgh and Accessible Town case studies) could indicate changing descriptive social norms if membership is rising. Anecdotal evidence reported by projects can also identify why people become involved in projects, which can relate to changing injunctive social norms, an observation relevant to the bike scheme in the City Centre case study.

D.4 Conclusions and reflections

Here we have presented the evidence in relation to monitoring and reporting CCF project success. Two key themes run through this appendix:

- Issues with the current carbon-focused reporting processes and whether climate change engagement could be a useful replacement or supplement.
- The reporting process in general, highlighting that it is seen as burdensome and offering suggestions for how it could be made more realistic.

This appendix also highlights some tensions, in particular around the purpose of reporting. A supportive context where openness about problems is encouraged can lead to them being resolved. Conversely, a context where projects feel judged on the content of their reports can lead to a more cautious and defensive approach to reporting. Resolving, or at least addressing, this tension in the reporting process would be an improvement, regardless of the actual content of the reports.

An open question raised by this research is how projects might report on Climate Change Engagement. This research has demonstrated that measuring CCF projects' impacts and outcomes directly in the community (through surveys for example) is time-consuming for a CCF project team also trying to deliver the project at the same time.[70] An alternative approach would be for projects to report on the activities they have run and to reflect on whether their programme has addressed each of the elements of Climate Change Engagement, providing supporting evidence of impact as available. This might make best use of information that project teams already have and collect but

[70] The resource intensiveness of assessing CCF project impacts is discussed from the researcher's perspective in Appendix I (How did the researchers assess project impact?).

it would require training in order to ensure that a “reflective practice” approach delivers best value, and for consistency across projects.

The role of the “regional hubs” that are being suggested for the new phase of the CCF was under discussion at the time of writing. They may be able to help with the points raised above, by bringing a locally grounded external perspective to help projects better monitor and report on their impacts.

Appendix E Assessment of community-scale impact

To examine the extent to which CCF projects have impact at a community scale, a survey was carried out in three of the five case study areas (in June 2017 and June 2018). The survey explored consolidated behaviours – i.e. the existence of behaviours in the community. It also explored the extent of attitudes and feelings about climate change. These insights additionally help to understand a community's 'environmental' characteristics. The survey was repeated after 12 months to understand what change might have occurred. The full technical background for the survey as well as some supplementary figures can be found in Appendix K (Research approach).

E.1 Engagement in pro-environmental behaviour

The survey asked participants to say how often they practised a range of pro-environmental behaviours (broadly based on the Scottish Government's 10 key low-carbon behaviour areas).[71] Analysing these responses allowed us to calculate for each participant a "pro-environmental behaviour score" ranging from low (rarely undertakes even the easiest behaviours) to high (regularly undertakes even the hardest behaviours).

There was a notable level of variation in this pro-environmental behaviour score within each case study community at both times that we conducted the survey. Some people were very pro-environmental in their behaviour, others were not with, unsurprisingly, the majority of individuals clustered somewhere in between. This suggests that there was variability in the degree to which pro-environmental behaviours were done within each community at both time points that we surveyed the community. There was a slight decrease in the pro-environmental score between the first and second surveys in all cases[72] (see Figure 7[73]). While this decrease is statistically significant, the change is very small, suggesting that the real-world implications would be imperceptible.

[71] See (accessed October 2020): https://www.gov.scot/publications/low-carbon-scotland-behaviours-framework/pages/2/.

[72] Paired t-test = 2.2, p = 0.03

[73] See also Figures 14 and 15, Appendix K (Research approach).

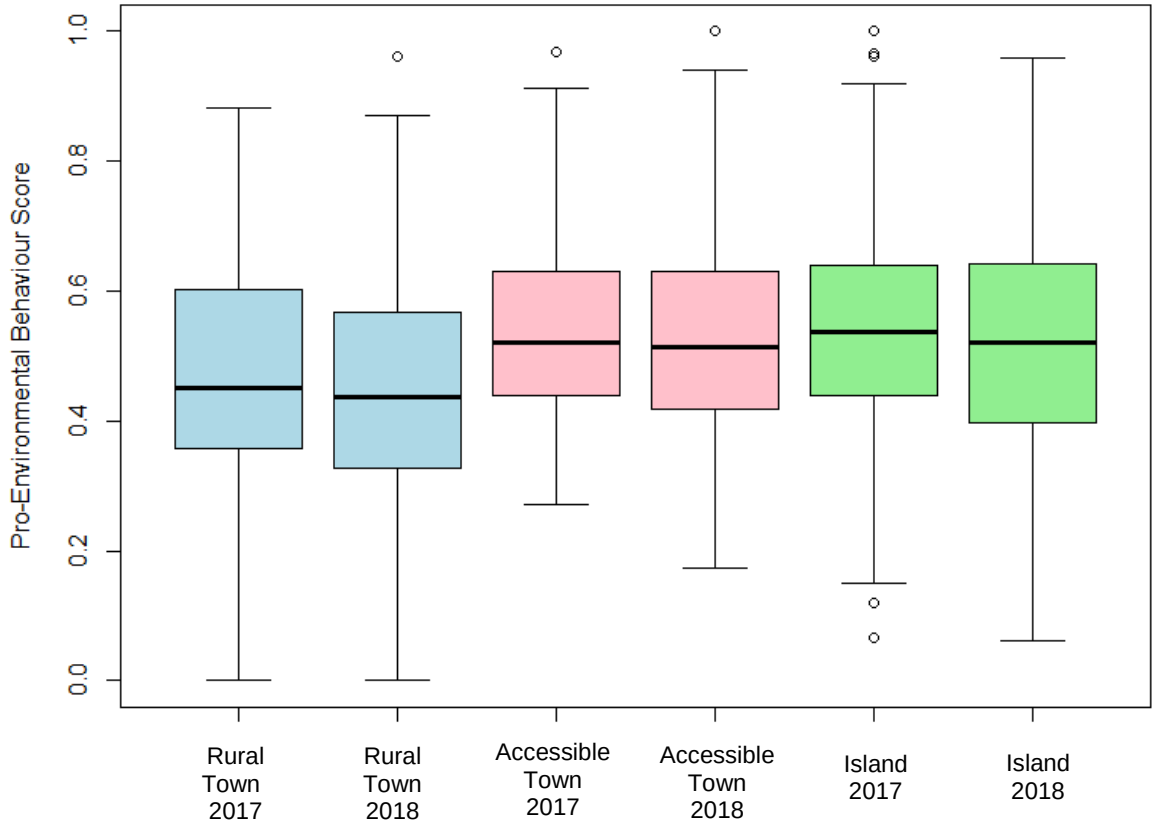

Figure 7: Comparison of pro-environmental behaviour scores between 2017 (left) and 2018 (right) for the three case studies (colour-coded: blue = Rural Town; pink = Accessible Town; green = Island).

We also calculated the change in each participant's pro-environmental behaviour score between the first and the second survey in order to assess whether behaviours changed (Figure 8[74]). Behaviour changes were variable in each community, with no clear trend emerging, as already noted above. None of the communities differed significantly from the others in how much behaviour change was observed.[75]

[74] See Figure 16 in Appendix K (Research approach) for correlation between scores on pro-environmental behaviour index at time 1 and time 2.

[75] ANOVA F = 0.046, p = 0.96

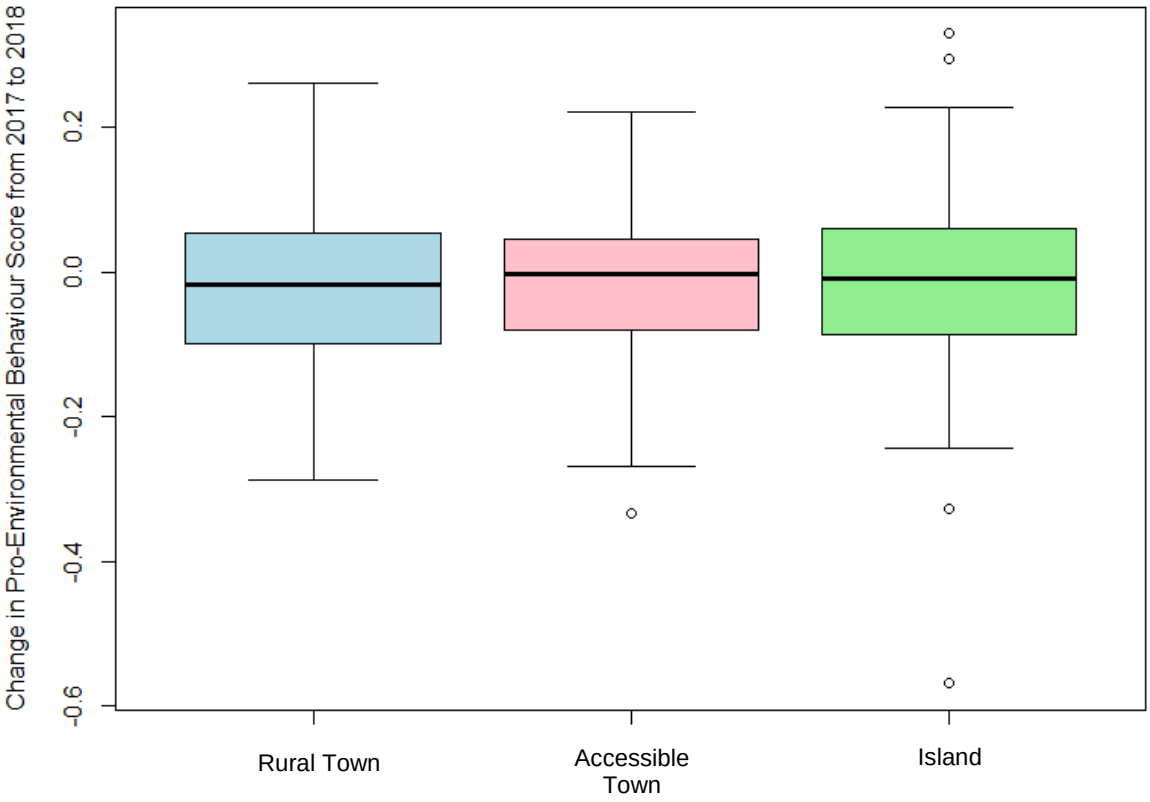

Figure 8: Distribution of the changes in participants pro-environmental behaviour scores in each of the three surveyed communities (blue = Rural Town; pink = Accessible Town; green = Island). Positive numbers mean the scores increased from time 1 to time 2 while negative scores mean that time 2 scores were lower than time 1.

The most accurate assessment of change over time based on these survey findings would be to say that we do not observe any significant community scale change over the one-year study period. We are confident that the results presented here are robust enough to support this general finding of "no significant change" in the practice of pro-environmental behaviour at the scale of the community for the three communities studied over the course of one year.

E.2 Attitudes towards climate change

The survey also assessed the degree to which participants held climate-friendly attitudes, by asking the degree to which they agreed or disagreed with five statements about climate change. Responses to the five separate items were combined into a single scale by reversing the direction of the negatively worded items and taking the mean value.

Across the three case studies, scores on these items were high[76], meaning that participants generally believed that climate change is happening, is caused by humans and that it is a real problem. No significant difference in attitudes was found between the

[76] Two-thirds of participants scored above 3.5, half scored above 4 and a quarter scored above 4.6, out of a possible score of 5.

three case studies[77] or between the 2017 and 2018 surveys[78]. The recording of high climate positive attitudes suggests that attitude and knowledge are not the limiting factors in behaviour change in these case studies. Figure 9 shows the breakdown of the scores in the different communities in June 2017 and June 2018.

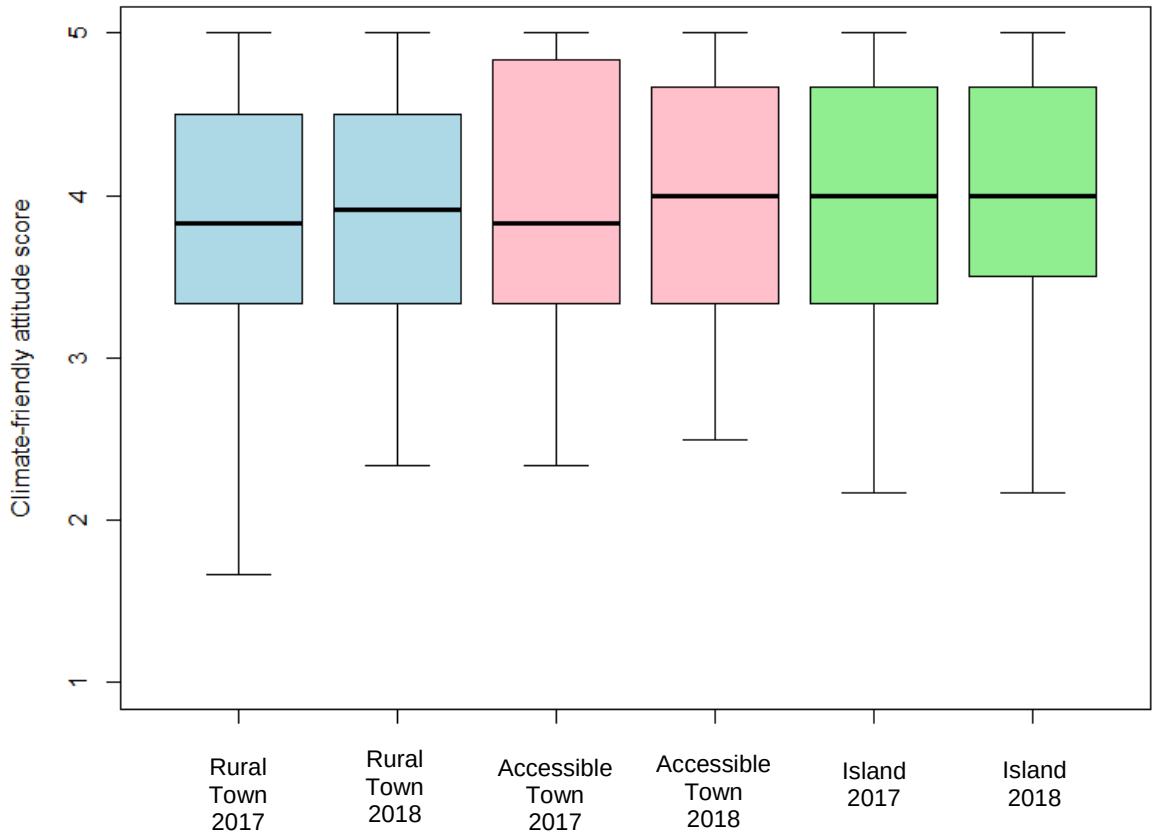

Figure 9: Distribution of climate-friendly attitude scores in 2017 (left) and 2018 (right) for the three case studies (colour-coded: blue = Rural Town; pink = Accessible Town; green = Island).

E.3 Relationship between attitudes and behaviour

A positive relationship between pro-environmental attitudes and behaviour was found in both before and after surveys in all three communities, illustrated in Figure 10.[79] Participants tended to have higher pro-environmental behaviour scores if they had higher climate attitude scores, both in June 2017 and in June 2018. Both relationships were statistically significant.[80] However, the very low r-squared values mean that they only explain a small part of the variation in the scores.

This result makes intuitive sense and is also supported by other studies.[81] We would generally expect increased awareness and concern about climate change to be

[77] Kruskal-Wallis $\chi^2(2) = 3.2$, $p = 0.197$

[78] Paired Wilcoxon test V=15155, $p = 0.163$

[79] See Appendix K (Research approach) specifically Section K8.5 "Attitudes related to climate change" for details about questions and analysis.

[80] $p < 0.001$

[81] Klöckner, C. A. (2013). A comprehensive model of the psychology of environmental behaviour—A meta-analysis. *Global Environmental Change,* 23(5), 1028-1038. doi:http://dx.doi.org/10.1016/j.gloenvcha.2013.05.014

correlated with more pro-environmental behaviours. At the same time, we would expect there to be many other factors that would complicate the relationship.

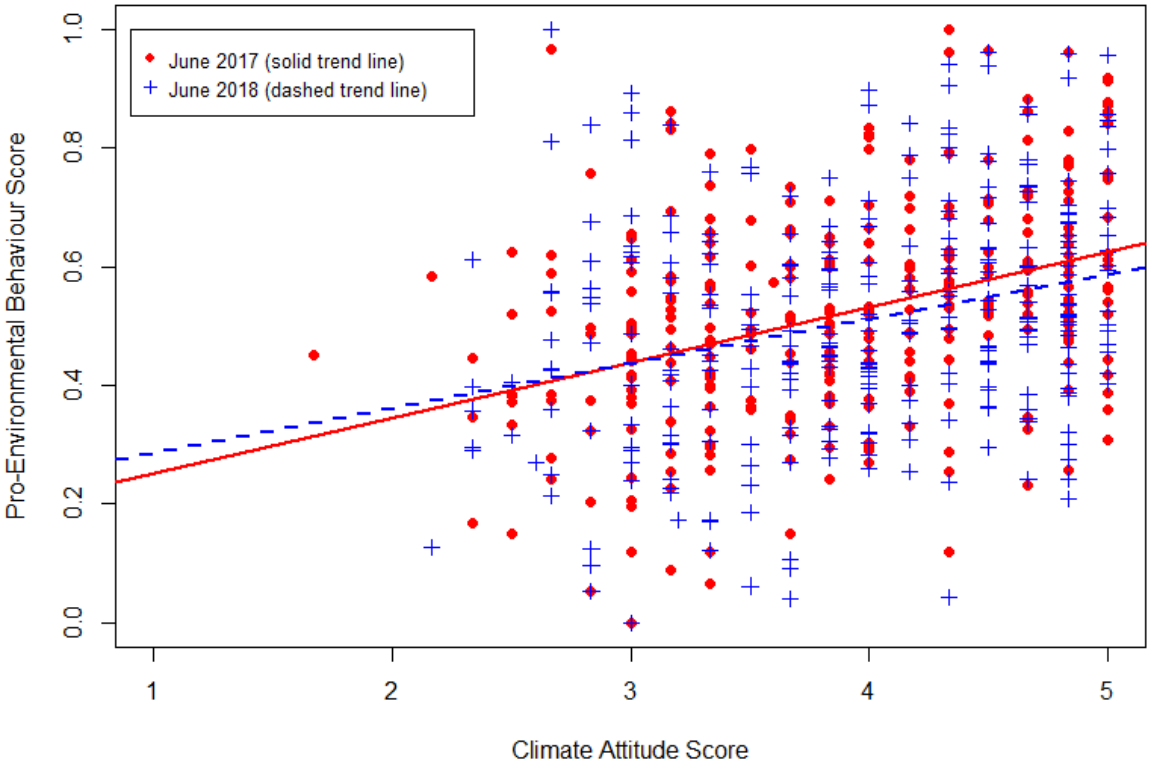

Figure 10: Scatterplot of individual participants' pro-environmental behaviour scores (0=low; 1=high) and climate-friendly attitude scores (1=low; 5=high), in June 2017 (red circles) and June 2018 (blue crosses). A trend-line showing the positive relationship is included for June 2017 (solid red) and June 2018 (dashed blue).

E.4 Feelings about climate change

To understand how people feel about climate change, the survey included a question asking participants to provide up to five words or short phrases to "describe your personal feelings about climate change". This provided a surprisingly rich source of data (see Figure 11). Analysis generated insight not only into the emotions people have about climate change, but also into the degree to which people felt confused or (mis)informed, as well as how they felt about governance and legislation in relation to climate change. Such insight can be used to understand the emotional landscape of a community which may have relevance for the degree to which members of a target community for a CCF project might engage. For example, community members who feel overwhelmed by or worried about climate change may feel helpless and less willing to engage.

Figure 11: Word-cloud based on open-ended question asking participants to “please describe your personal feelings about climate change (using up to 5 single words or short phrases to describe your emotions or feelings)”.[82]

E.4.1 Emotional reactions

When asked to describe their personal feelings or emotions about climate change, people most frequently expressed worry, concern, anxiety and sadness. Often these sentiments were directed towards the future and expressed concern that "future generations will suffer", with parents and grandparents referring in a general sense to the difficulties that their children and grandchildren may face. Expressions of powerlessness, resignation and pessimism were also common, with people reporting that they feel "a bit helpless as to what I should do!" and "hopeless about affecting change in time".

Other, arguably more intense negative emotions were also expressed in relation to climate change, including fear, anger and frustration. Fear-emotions focused on the potential consequences of climate change both for the local area ("fear of sea rising in our location") and more widely (“terrified for the future environment”). Anger tended to be directed towards humanity’s perceived contributions to climate change (“angry at the waste we cause”) and the lack of action taken to prevent it (“angry that developed world not doing more”), and towards people who do not recognise the seriousness of climate change: “incandescent with deniers”, "amazed & angry at ignorance of media".

For some people, emotions about climate change extended to feelings of guilt and shame regarding their personal contribution or lack of action regarding climate change

[82] The words ‘climate’ and ‘change’ and common words of less than three letters are excluded. (N = 331 from community-scale surveys associated with three CCF case studies; see Appendix K (Research approach) for further detail.

("guilty as I should be doing more"), a sense of "communal guilt" relating to the behaviour of the current generation as a whole, and shame regarding "the legacy we leave to next generations".

While negative emotions dominated people's responses, expressed alongside them, and often by the same people, was a degree of optimism. For example, one person expressed their feelings as "apprehensive", "concerned", "worried" and "helpless" but also "forever optimistic". Hope was often invested in a sense that "it is not too late to do something" or that "things will change"; for some, hope was directed towards developments in renewable technologies.

In summary, the emotions that people expressed about climate change were powerful, complex and sometimes conflicting. They relate to people's feelings about their personal interactions with the environment, as well as more generalised concerns about the role of humanity as a whole.

E.4.2 Confusion and (mis)information

Participants frequently referred to the fact that climate change is "real" and "happening" and to the seriousness and scale of its effects: it is the "greatest problem" and "dwarfs other planetary issues". However, a sizeable minority of people expressed confusion about climate change in terms of what it means ("told lots of different thing[s]"), whether it is happening ("confused about the truth"), and lack of knowledge and understanding about climate change, both personal ("I do not know enough on the subject"; "I am quite ill-informed about climate change") and in relation to others ("it is still not fully recognised by the majority"; "Annoyed at people who argue there is no problem"). Participants commented that not enough information is available about climate change, and that it is difficult to distinguish scientific facts from "spin" and misinformation from groups with vested interests.

Amongst the comments is the belief that climate change is cyclical, occurring over thousands of years. While a few commented that concern about this is "eco hippy hysteria" (or similar), more often participants commented that they believe that the natural process of climate change is being accelerated by human activity.

There was also variation in people's understanding of what can be done about climate change. For some, the effects were felt to be irreversible, inevitable ("The damage is already done"); a smaller number believe the effects are avoidable or can be mitigated, managed or slowed down.

E.4.3 Governance and legislation

The surveys attracted comments about the role of governance and legislation in addressing climate change, along the lines that "governments are not doing enough" or are treating climate change with a lack of urgency: "incentives & penalties are the only way forward", "bigger incentives to achieve change", "not enough pressure on the individual to do more". It was a commonly held view that more action is needed from governments, and that action needs to be on a global scale ("international co-operation required to combat it") but that "not all countries act!", with some people expressing anger at "other countries' lack of effort". Some frustration was expressed specifically at the US Government and at US President Trump in particular, with comments such as "Most of the people currently in power, especially Trump, have turned a blind eye [to climate change]" and "Terrified by political apathy, e.g. Trump". This reflects the timing of the first survey in 2017, following the United States' announcement of its withdrawal from the Paris Agreement, and President Trump's continued presence in the media thereafter with respect to climate change. The Scottish and UK governments attracted relatively few comments in comparison, with some people feeling that the UK has limited capacity

for managing CO_{2e} emissions ("There is insufficient infrastructure in the UK to save energy currently being wasted"), and a degree of pride expressed in Scotland's use of renewable technologies ("Proud of Scotland's alternative technology").

E.5 Conclusions and reflections

The findings presented here show that no discernible impact at the scale of the whole community was observed in three case studies where a survey was conducted as part of the research that could be attributed to the CCF projects (or any other cause for that matter). The absence of observed change in practised behaviours or attitudes toward climate change at the population level in the survey results has three possible causes:

- The short timescale over which this research was carried out did not give participants much time to make changes.
- The relatively small scale of the projects funded by the CCF means that it is unrealistic to expect such projects to be reaching enough people in the surveyed postcodes to result in a discernible difference at the whole community level. This emphasises the important distinction between the community of participants (the people engaged by a CCF project) and the wider community of place (the geographical target community).
- People started from a relatively high baseline of climate-friendly attitudes.
- The relatively small response from the sampled population.

Further complexity is evident in the findings on attitudes to and emotions about climate change. The survey identified a high level of climate-friendly attitudes among the participants, in that they understand that climate change is a real problem. Additionally, participants expressed great strength of feeling, usually negative, about climate change. It was also evident that some people feel powerless in terms of their ability to make a difference in the face of a global issue. For these people, knowledge and understanding of climate change may not necessarily lead on to taking up new behaviours or the spreading of social norms. Empowering people who are overwhelmed by the scale of the climate crisis to engage meaningfully in climate-friendly behaviours will be a key challenge for CCF projects in the future.

Appendix F Relative difficulty of doing different behaviours

In addition to identifying what worked and what did not work for encouraging behaviour change, we are also able to comment on what seem to be the easiest and most difficult behaviours across four domains (energy, transport, food and waste), based on survey analysis.[83]

F.1 Behavioural difficulty

Table 4 provides insight on the relative difficulty of behaviours in each of the CCF activity domains.

[83] Analysis deriving the ranking of easiest and most difficult behaviour based on Kaiser, F. G., Oerke, B., & Bogner, F. X. (2007). Behavior-based environmental attitude: Development of an instrument for adolescents. *Journal of Environmental Psychology,* 27(3), 242-251. See Appendix K (Research approach) for analysis underpinning this insight.

Table 4: Easiest and most difficult behaviours to do across four domains of environmental behaviour.[84] [Items marked with an asterisk were reverse scored prior to analysis.]

	Waste	Energy	Transport	Food	Other
"Easiest" Behaviours	I reuse my shopping bags I recycle empty glass bottles and jars I recycle empty plastic bottles and jars I recycle used paper I try to find another use for things that I no longer use rather than throw them away	I turn the lights off when I leave the room I wash my clothes at low temperatures I own an energy efficient refrigerator (efficiency class A+ or better)	I drive in such a way as to keep my fuel consumption as low as possible	I buy local food	
Behaviours of moderate difficulty	I repair things rather than throw them away I donate electrical goods to be reused I purchase clothes in second-hand shops	I have done everything I can to make my house energy efficient I have invested in improving the heat insulation of my flat or house I monitor my energy use My daily showers last three minutes or less I own an energy efficient dishwasher (efficiency class A+ or better)	When driving, if I am at a red light, I keep the engine running* I drive to work or school* I refrain from flying	I avoid eating meat	I talk with friends about environmental issues
"Most difficult" Behaviours		I have installed equipment in my home to generate renewable electricity In the winter, I air rooms while keeping on the heat and leaving the windows open simultaneously*	I am a member of a Car Club I ride a bicycle to work or school I refrain from owning a car I car share when commuting to work or school I walk to work or school	I am a vegetarian I waste food that I have purchased*	I am a member of an environmental organisation

Waste behaviours are rated as relatively easy (half of the easiest), which illustrates how behaviour around recycling (glass, paper, plastics) has become normalised, alongside retention of traditional norms around reuse rather than throwing things away. Some waste behaviours are rated as more difficult to encourage. This could be because they rely on skills (repairing items instead of throwing away), on infrastructure (e.g. for donating electrical goods for reuse) or because of public attitudes (purchasing second-hand clothing).

[84] Rankings were broadly similar in 2017 (Time 1 survey) and 2018 (Time 2 survey), with the same top 'easiest' and 'most difficult' 10 behaviours.

Energy behaviour change is more mixed, being evenly spread across the range of difficulty. Some are relatively easy: turning lights off when leaving a room has become normal, as has washing clothes at low temperatures and most refrigerators are now A+ rated. On the other hand, installing renewable electricity generating equipment is one of the most difficult behaviours. (Not) airing rooms with the heating on was also rated as difficult.

Food behaviours also presented a mixed picture. Buying local food was rated as relatively easy, whereas vegetarianism or avoiding meat were more difficult. Not wasting purchased food was also a relatively difficult behaviour.

The most striking result is around transport behaviours, which constitute half of the most difficult behaviours to change. The overall picture is of a strong dependence on car use and ownership.

We compared the survey results to the 10 Key Behaviour Areas in the Low Carbon Scotland: Behaviours Framework (see Figure 12[85]), which outlines which behaviours could be targeted in public engagement activities.

In the energy domain, the survey analysis suggests that electricity-saving behaviours (Point 3) are easier than behaviours related to keeping the heat in (Point 1). Our survey did not include questions about behaviours related to heating equipment and management (Points 2 and 4).

In the transport domain, the survey analysis suggests that driving more efficiently (Point 6) is the easiest, that reducing the reliance on cars (Point 5) is the most difficult, and avoiding flying (Point 7) is somewhere in between.

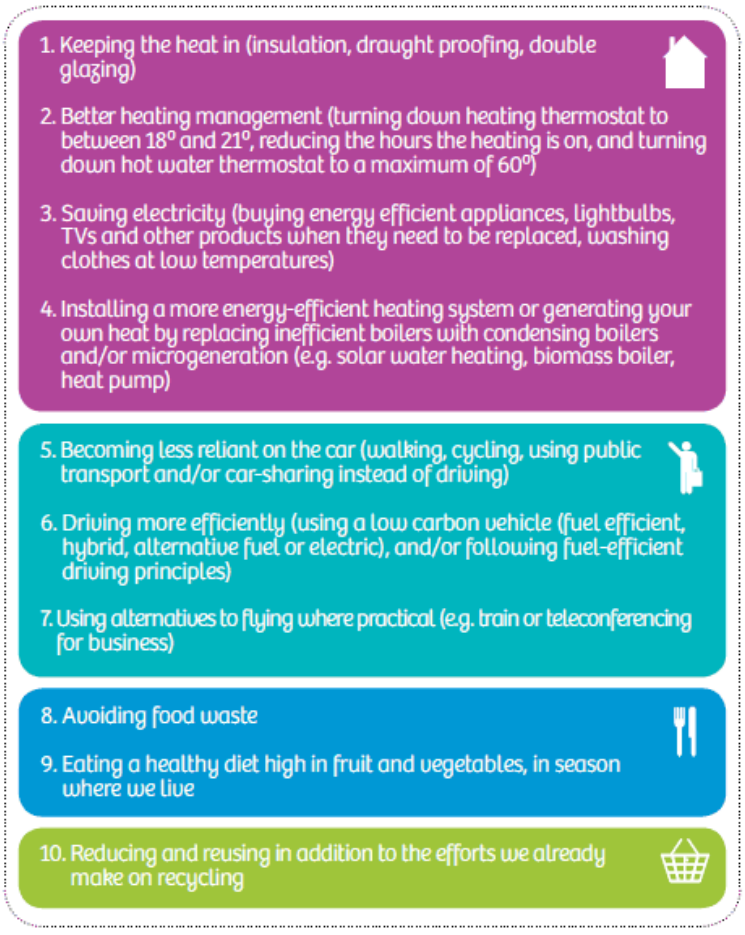

Figure 12: The 10 key behaviour areas in the Low Carbon Scotland: Behaviours Framework. [see footnote for link]

In the food domain, the survey analysis suggests that eating in season is easiest, eating less meat (both pertaining to point 9) is more difficult, and that avoiding food waste (point 8) is challenging.

Finally, in the waste domain, the survey analysis mirrors the wording of point 10 which suggests that recycling is already an embedded behaviour whereas reusing (and reducing) are more difficult.

[85] Figure from (accessed October 2020) https://www.gov.scot/publications/low-carbon-scotland-behaviours-framework/pages/2/.

F.2 Conclusions and reflections

Overall, our survey results suggest that the key behaviour areas identified in 2013 by the Scottish Government remain relevant. Saving electricity (point 3), efficient driving (point 6) and waste (point 10) could maybe be updated in their level of ambition. The other points remain a challenge, particularly point 5 on reducing car reliance and point 8 on reducing food waste.

For the Climate Challenge Fund, this analysis shows that there are some “easy wins” in each domain: promoting seasonal diets (food), promoting recycling (waste), promoting efficient driving (transport) and reducing home electricity use (energy). On the other hand, our analysis also shows there are behaviours that are harder to tackle: reducing car dependency (transport), reducing food waste (food), improving domestic heating (energy) and promoting reuse and repair (waste).

Appendix G Commentary on current CCF funding criteria

We considered our results in the context of the guidance issued for the CCF application process,[86] which includes criteria that have remained largely unchanged over time. Four key criteria by which applications to the fund will be assessed are outlined:

1. Community: Your community must be at the heart of the decision-making process of the project. Community demand for the project must be clearly demonstrated and projects must be designed and delivered by communities. Applicants should show how they will work in partnership with other local organisations that are engaged in similar or related work.
2. Improved Climate Literacy: The project must deliver increased awareness and understanding of climate change and enable the community to make informed choices to reduce its impact on climate change.
3. Carbon (CO2e) Reduction: The project must lead to a measurable reduction in local carbon emissions through the activities it delivers.
4. Sustainable Legacy: The project must deliver a low-carbon legacy, with outcomes and/or behaviours that continue after the project is completed.

More prominence has recently been given to the Climate Literacy criterion. The following findings may inform selection criteria as the CCF programme evolves.

G.1 Community

Your community must be at the heart of the decision-making process of the project. Community demand for the project must be clearly demonstrated and projects must be designed and delivered by communities. Applicants should show how they will work in partnership with other local organisations that are engaged in similar or related work.

Our work with the case study CCF projects confirms the importance of partnership working.[87] Other public and third sector organisations were practically and strategically important to CCF projects in meeting their goals. Strong networks and partnerships helped projects to reach parts of the community that would not necessarily engage in climate change projects, and to share resources. When working with other environmentally-focused organisations, running shared activities (such as film nights or other environmental actions) can reduce workload and increase the numbers of participants. However, most of our case studies also had partnerships with organisations focusing on other issues in their community (poverty, mental health, exercise, ethnic minorities, local development), which often helped to increase the reach of the CCF projects while adding a climate change or environmental angle to the partner organisations' activities. This suggests it could be worth revising the community criterion to encompass *all* other local organisations.

[86] See (accessed December 2019): https://www.keepscotlandbeautiful.org/media/1564133/ccf-stage-two-guidance.pdf.

[87] See Dinnie, L., Msika, J., & Irvine, K.N. (2018). *Climate Challenge Fund: Organisational Networks*. ClimateXChange Community-Led Behaviour Change – Policy Note 3. Available from (accessed October 2020): https://www.climatexchange.org.uk/media/3717/community-led-behaviour-change-policy-note-3-org-networking-feb-2019.pdf..

Our findings also confirm the importance of ensuring that projects are designed in accordance with their community's characteristics. For example, the different case study CCF projects found ways of working with their communities' particular *geography* ("island-ness", scattered groups in an urban area, dispersed rural populations, vast urban conglomerations, etc), their particular *demographics* (young/elderly people, incomers/long-time residents, second-home owners, students, unemployed) and particular *local issues* (poverty, mental health, economic development, tourism, town-university tensions, attachment to place, etc).[88]

We call these three characteristics the "**Where?", "Who?" and "What?" of the community** and they are brought home particularly well by our two waste-focused case studies (Island and City Burgh) that had a very similar focus on reuse and repair and yet looked very different in practice. In both of these cases, project staff drew on their intimate knowledge of the local area to design a project that resonated with the needs of the local community. We suggest that linking community characteristics to the CCF's focus on climate change in this way is an essential skill for project teams.

One aspect raised by this research that is not fully included in the criterion as currently worded is the importance of reaching as large and as diverse a group of people as possible within the community.[89] All of our case studies were working not just with one community, but with multiple and overlapping communities often occupying the same geographical location, and deployed a range of strategies to make their activities as widely appealing as possible. This is a factor which clearly influenced project success, so we suggest that the "Community" criterion could mention the fact that a project could aim to reach a diverse range of people within its target community, or even target multiple, overlapping communities.

G.2 Climate literacy

> *The project must deliver increased awareness and understanding of climate change and enable the community to make informed choices to reduce its impact on climate change.*

As it is written, this criterion maps well onto the "Knowledge" element of our Climate Change Engagement framework. That is, the case studies that we worked with increased people's "awareness and understanding of climate change" on the one hand as well as increasing their knowledge about the links between their behaviour and climate change to "enable the community to make informed choices to reduce its impact on climate change." They deployed a range of strategies to do so.

However, this research also shows that projects had impacts on people's environmental awareness beyond climate change and helped them reflect about their behaviours' impacts more broadly. Given the CCF's explicitly stated focus on climate change, these broader knowledge impacts could be treated as 'nice to have' rather than helping to fulfil the policy's core aim (in the same way that previous reviews of the CCF have highlighted a range of 'nice to have' outcomes around community cohesion, individual empowerment, etc). However, our findings suggest that:

- Increased general environmental awareness can be seen as including increased awareness of climate change;

[88] For detailed insight from this research, see Appendix H (Making the most of CCF's community focus), specifically Section H.1 "Community characteristics' influence on climate change engagement".

[89] For detailed insight from this research, see Appendix C (CCF project design), specifically Section C.3 "Influencing social norms through CCF project design".

- The people most likely to be impacted by CCF project's knowledge-increasing activities are those with the least prior knowledge for whom specifically climate-related messages may be too technical or abstract; and
- Communicating general environmental messages is much easier and accessible for project volunteers than conveying climate-related knowledge specifically, which usually relied on trained staff.

While we recognise that there are potential downsides to diluting the focus on climate change knowledge specifically, we suggest that the wording of the Climate Literacy criterion could be amended to recognise CCF project's impacts on environmental knowledge more broadly.

G.3 Carbon (CO_2e) reduction

The project must lead to a measurable reduction in local carbon emissions through the activities it delivers.

This research did not seek to quantify reductions in carbon emissions achieved by the case study CCF projects. This research was commissioned to fill a gap in the understanding of CCF projects' impacts beyond carbon reductions, and to think about ways that those impacts might be more fully understood and measured, both by the projects themselves and by others. The interest in non-carbon impacts of community-based projects has increased in recent years.[90,91] At the same time criticism of the focus on carbon reductions as a measure of success of such projects has become louder.[92]

However, we suggest that the criterion as currently worded is focused specifically on what we have called consolidated behaviours – the actual low-carbon behaviour a person is now doing. It is these long-term changes in behaviour (through one-off decisions or formation of habits) that directly result in significant carbon emissions reductions.[93]

What our research shows is that looking only for changes in consolidated behaviours misses the impacts that CCF projects have all along the behaviour change *process*: discovering new behaviours, getting interested in them, trying them for the first time and acquiring the necessary know-how. Most of the impacts of our CCF case studies were in fact on these various components of the behaviour change process, rather than on long-term consolidation, which our survey found no significant evidence for at the community scale. There are many barriers to long-term consolidation, only some of which are directly within the control of a CCF project. We suggest that the Carbon Reduction criterion would benefit from some revision in light of our research conclusions. This could include renaming it "Low-Carbon Behaviour Change" or at least giving explicit consideration to the various parts of the behaviour change process that we have

[90] Hobson, K., Mayne, R. & Hamilton, J. (2016). Monitoring and evaluating eco-localisation: Lessons from UK low carbon community groups. *Environment and Planning A*, 48: 1393-1410.

[91] Feola, G. & Nunes, R. (2014). Success and failure of grassroots innovations for addressing climate change: The case of the Transition Movement. *Global Environmental Change*, 24, 232-250.

[92] Taylor Aiken, G. (2015). Community Number Capture. *Soundings,* 58: 81-90.

[93] Our research illustrates that CCF projects are taking people through a process of behaviour change which involves more than just the final adoption of more climate-friendly 'consolidated' behaviour. The distinct components include: discovery, interest, trial, learning and consolidation.

identified.[94] This would help to match the intended policy outcomes with the behavioural impacts that community-scale, relatively short-term projects are best placed to achieve.

G.4 Sustainable legacy

The project must deliver a low-carbon legacy, with outcomes and/or behaviours that continue after the project is completed.

Initial designs for this research considered several methods to facilitate assessment of long-term changes. For budgetary reasons, these were excluded in order to maximise the in-depth work we would be able to do with our set of five case studies, thereby emphasising process of change rather than legacy.

Our findings do, however, allow us to make some comments on the Sustainable Legacy criterion in terms of the longevity of changes to behaviour, knowledge and social norms.

Treating behaviour change as a process, as is suggested in our Climate Change Engagement framework, has implications for how we understand the legacy of CCF projects. Examining each element of the behaviour change process provides some insight into whether the impacts are something that might persist beyond the end of the project:

- Once someone **discovers** a new behaviour and becomes aware of it (in their community) for the first time, they are unlikely to forget it again.
- Someone's **interest** in a particular behaviour may wax and wane, so this is less of a legacy impact.
- Once someone has a good experience **trying** a behaviour for the first time, the positive association is unlikely to be lost.
- Once someone acquires the skills and **learning** how that is associated with a particular behaviour, they are unlikely to forget it ("it's like riding a bike, you never forget!")
- **Consolidation** is long term by definition.

Thus discovery, trial and learning are behavioural impacts likely to persist over the long term and should therefore be counted as part of a CCF project's legacy, in addition to any consolidated behaviour changes achieved during the course of the funding.

It is difficult to comment on the longevity of changes in knowledge, based on the data that we have collected. However, it is likely the changes we have identified, particularly the more general increases in environmental awareness, would persist beyond the end of the CCF project.

Our work on social norms, on the other hand, suggests that these are also a key part of a CCF project's legacy. Our case studies were able to have impacts on both descriptive social norms ("what's normal") and injunctive social norms ("what's right"). The changes to injunctive social norms are particularly likely to persist into the future; they are deep seated and generally require sustained intervention to change them in the first place.

We therefore suggest that the Sustainable Legacy criterion is reasonable, but that our findings help elaborate the kinds of project impacts that might be considered under that heading.

[94] We acknowledge that the project area of energy efficiency improvements to community owned buildings might not fit well with a renaming that focuses on behaviour.

Appendix H Making the most of the CCF's community focus

This research also aimed to draw out findings and lessons relating to the policy landscape beyond climate change, especially with respect to community-level action in tackling climate change (as opposed to individual or societal) and community empowerment. In this sense, the CCF programme forms part of a wider suite of community empowerment policies, including but not limited to those within the Community Empowerment (Scotland) Act 2015. As such, it faces many of the same barriers and opportunities as other community-focused policies.

In this appendix, we present evidence and findings relating to the CCF's "community"[95] focus.

H.1 Community characteristics' influence on climate change engagement

This section explores the importance of community-specific approaches to climate change engagement in the five case studies. It considers how the projects interact (or not) with the characteristics of the communities they seek to engage, and how sensitivity to factors such as sense of place, demographics, socio-economic status and mobility can influence CCF projects' ability to facilitate action to address climate change.

In general, there was a recurrent theme across the case studies in relation to age, with many interviewees perceiving that older and younger generations are more engaged with climate change and that it is the middle age groups that are less engaged. Interviewees typically felt that older people were generally less wasteful and 'made things last', and younger people were more tuned in to messages about the environment, and wanted to make a difference because they will face the future consequences of a lack of action. Some older interviewees mentioned that their interest in climate change stems from concern that while change might not affect them, it might affect the lives of future generations:

> *I think there's a lot of the mentality 'well it's not going to affect me in my lifetime so why...why would I bother?' ...possibly people...and I'm not saying this is the case but I've got a one-year-old grandson, ...and...I tended to drum it into my kids look it might not happen in my lifetime, it might not happen in yours, but in his lifetime what do you think is going to be the state of affairs when he is your age?* (interviewee, Island case study CCF project)

The Island case study raised fascinating complexity and depth in relationships with place, specifically around 'islandness', both geographically and culturally, and how this affects environmental awareness and engagement. Two of our case studies, the Island and the Accessible Town, had fluctuating populations according to the time of year – the former with tourists and the latter with students – and both had high levels of second home ownership. These characteristics offered both challenges and opportunities for the CCF projects in these places. Opportunities included good access to a fairly large pool of volunteers for a portion of the year. Challenges included non-permanent residents

[95] We acknowledge the diversity of meanings of "Community" and recognise that there are risks to the uncritical use of the term. However, rather than strictly adopting a single definition, our usage reflects the policy world, where the term is used pluralistically to alternatively refer to community as an actor, as a scale of activity, as a spatial setting, as a form of network, and as a type of process. For details, see Walker, G. (2011). The role for 'community' in carbon governance. *Wiley Interdisciplinary Reviews: Climate Change*, 2: 777-782.

and different forms of mobility within communities that affect how people engage with climate change at a local level. The realities and complexities of modern life mean that communities are characterised by different forms of mobility (commuters and temporary residents, seasonal and migratory populations) rather than a binary of incomer/local, and that this has a bearing on a community project's capacity to engage local residents with climate change.

H.1.1 How do CCF projects respond to their communities' characteristics to facilitate action to address climate change?

Another way to look at this issue is to ask how CCF projects understand and work with the characteristics of their communities. From our in-depth case-study approach we were able to explore the ways in which CCF projects were designed, or adapted themselves, to their community's characteristics. The Island and City Burgh case studies stand out as projects that have been designed around the requirements of their places and the people who live there. For example, the Island project has a strong focus on the difference that recycling can make to the *island* itself, with messages relating to pollution of the sea and transportation of waste to the mainland; this tapped into a longstanding "green" culture of repairing, reusing and upcycling and made the project's goals relatable to local residents. The project rolled out micro-shops to different villages around the island, in recognition of the dispersed population and to minimise travel. The City Burgh case study, on the other hand, responds to the quite complex needs of an area of multiple deprivation to which residents have a strong sense of attachment by providing a high-end, low-cost, discreet clothes shop. It is notable that the project has an arrangement with the local food bank and other hardship organisations whereby individuals and families can choose multiple items for free, either just to clothe themselves adequately (e.g. with winter coats) or for specific occasions such as job interviews and funerals. Tackling poverty was a theme that ran through the core of this project, with all aspects of the project designed to be accessible to those on low incomes or living in poverty.

These two projects provide good examples of how understanding and responding to the particular characteristics of the target community can affect success, and hence engagement with climate change. Both projects are addressing the same overarching challenge (tackling climate change by reducing local carbon emissions) through similar approaches (shops encouraging reuse/recycling/upcycling), yet their messaging and specific designs are tailored to the circumstances of their local communities and they are successful in that respect.

In contrast to this, the Rural Town case study faced a number of challenges due to its geographical location and the characteristics of the local community that it was not able to adequately address through this scale of funding. Arguably, the transport initiative does not really respond to the community's requirements, due to both geographical and demographic factors. Participants mentioned anxiety about the range of the electric cars and their suitability for a rural location which is 30-40 miles from larger urban centres; notably the project responded by swapping the electric cars for hybrid vehicles. There was also a sense that rural families need reliable access to cars in order to access services and are reluctant to give up their second cars in case the Car Club cars are not available when they need them. These are structural factors that community-based action is not well placed to address.

The Accessible Town case study disrupts the simplicity of this lesson. From the interviews, "town" and "gown" factions have quite different experiences of place, and perceptions of its characteristics. This case study is both unusual and typical, in that many places have multiple and diverse communities sharing the same geographical

location,[96] and communities can be based around characteristics other than a shared location (such as identity, sexuality, beliefs, age and so on). Projects should therefore consider who their target groups might include, and the different perspectives that might be present in their target groups when designing their approach.

The practical and transferable lesson here is for projects first and foremost to understand their local target communities ("know your community!"), specifically:

- Where they are – what are the features of the geographic location (e.g. urban/rural/island/ commuter belt) that affect residents' engagement with climate change?
- Who they are:
    - What is the demographic make-up of the community? What is the age structure? What do people do for a living? Is it a wealthy area or are there issues of deprivation? How is the community made up in terms of "locals", "incomers" and transient populations?
    - What is/are the local culture(s) like? Is there already a "green" culture that the project can tap into or would messaging be more effective by focusing on a different concern, e.g. poverty or isolation, as a "hook"?
    - Is it a cohesive community or are there different groups to engage (perhaps in different ways)?
- What are the most important and immediate issues facing the community?

Project proposers can then build their project in such a way that it is in tune with the place, the people and their concerns from the outset, and also be responsive to changes in the community during the course of the project. Importantly, by developing a real depth of understanding of the local area, projects can respond in thoughtful and creative ways to make the goals *relatable to the local people*. Projects that are deeply embedded in the geography and culture of their communities in this way are more likely to be successful because they are in tune with local values and concerns and therefore receive support from their local community.

A key message emerging from this section is that careful consideration of a community's characteristics may raise questions about the extent to which having a clear environmental message is always desirable and effective in encouraging engagement with climate change (and should therefore be used as a marker of a project's success). A project may successfully bring about measurable behaviour change in its community *specifically because* it is creatively and sensitively designed to encourage climate change awareness and behavioural change alongside carefully considered local concerns that may not be environmental.

H.2 Organisational characteristics' influence on climate change engagement

In our analysis of project design (Appendix C), we realised there were a number of factors that influence success, which are less related to the Climate Change Engagement framework and are more about the characteristics of the CCF projects as examples of third-sector, community organisations. These organisational characteristics

[96] Massey, D. (1994). *Space, Place and Gender,* Minnesota, University of Minnesota Press.

cover a wide range of what the literature might term 'capacities'[97] and include factors such as levels of creativity, use of volunteers, facilitating teamwork, skill of staff/coordinators, extent of partnerships, clarity of vision, organisational lifetime and access to space(s).

H.2.1 Levels of creativity

Projects that were able to adopt new ideas and approaches and encourage creativity and innovation within the team were more successful than projects which did not show signs of creativity. Notable examples from our case studies include the City Burgh project and the Island project. The City Burgh case study created a strong and distinctive brand and design for its 'swap shops', found interesting and original ways to present information on climate change in its own annual report, and responded to one of the questions in our workshop by running their own survey to find the answers. The Island project was able to use emerging public concern over disposable plastics to run events highlighting the need for behaviour change in relation to climate issues, thereby showing adaptability within the project's life-course.

Projects that were more concerned to follow closely their project design and be less innovative could be considered less successful in engaging their wider community with climate change, partly because they did not put their effort into instigating new activities or responses to current events, or did not exploit the opportunities to communicate messages about climate change in visually creative ways. Projects that are less visually creative could be better suited to managing activities where social activities are less important in fostering climate change behaviour, such as energy or transport. The capacity for creativity and innovation lies strongly with the project coordinators, and some people and teams may be 'naturally' more creative than others, and this can vary over time. For example, one of our case studies had a change in staff over the lifetime of the project and this resulted in trying a different way to present the project within the community, including rearranging its shop space, engaging with other community organisations and presenting the project in the local newspaper.

The freedom that projects felt to be creative in their activities also depended on their relationship to their CCF grant. The projects that treated their funding agreement as a contract (e.g. to deliver a particular number of each type of activity) felt more constrained in their ability to diverge from what was promised and take advantage of potential new opportunities. This may be due to the way in which the different project funding bids were written and the different relationships that projects had with their development officers.

H.2.2 Use of volunteers

To a greater or lesser extent, all our case study projects involved (in some cases relied for their success on) volunteers. Projects that were able to recruit, train and retain volunteers were more successful; they could undertake more activities, and volunteers were more confident in conveying messages about the project and about climate change. This helped to build understanding of both climate change and of the links between climate change and behaviour. Projects that were able to recruit self-motivated and skilled volunteers from their local community (e.g. a university) were more successful because they could generally run activities that the local community supported and wanted to see happen. Since many CCF projects operate as charities,

[97] Middlemiss, L. and Parrish, B. D. (2010). Building capacity for low-carbon communities: The role of grassroots initiatives. *Energy Policy,* 38(12): 7559-7566.

finding people willing and able to volunteer as members of the board or steering group, is crucial to project success.

Our Accessible Town case study project was located within a university town. This gave it access to several pools of potential volunteers: students, university staff and their spouses or partners, and retirees with links to the university. Not only did this project benefit from access to many volunteers, but the volunteers often already had relevant knowledge and skills such as education in environmental subjects, experience of project management or even simply personal confidence in their own abilities. Newly arrived students with a pre-existing interest in environment and climate change were often drawn towards the university societies that then led them to the organisation involved in the CCF project.

Such a situation could not be more different from one of our other case study CCF projects, located in a more deprived urban area. However, in this case, the project benefitted greatly from the large proportion of local residents who were unable to find paid employment, or who could not, for a range of reasons, take up a conventional job. For this project, training and supporting the volunteers was a very important and integral part of the strategy, to the extent that there was one member of staff dedicated to that function. The result was a multiplier effect on the project team's ability to organise events, workshops and other activities, all while providing tangible benefits to the volunteers themselves. The project also benefitted from its close connection with an association of retired and mostly widowed people who were living alone and were looking for activities to get them out of the house. Many of this elderly generation brought useful skills (e.g. sewing, carpentry) and thriftiness picked up from their youth when they had to 'make things last'. This made them feel useful and knowledgeable, and was used effectively by the project to connect different generations that might otherwise struggle to find something in common.

The other case studies did not have as much volunteer involvement. In one case, the project activity (running a car club) did not particularly lend itself to volunteering. In the other cases, the pool of potential volunteers was smaller and this meant that dedicating time and effort to recruitment, training and supporting volunteers was less likely to be of net benefit to the project team.

The kind of volunteers that a project has access to therefore plays a key role in project success while, in turn, projects also play an important role in developing the skills and confidence of their volunteers. Where a safe and nurturing environment is provided, people were more likely to join a project as volunteers because existing volunteers acted as ambassadors for encouraging others to join.

H.2.3 Facilitating teamwork

The composition of a team within a project is important to success because it facilitates common goals and shared aims and understandings of what the project is trying to achieve. Project teams that get along well together and are better able to understand one another can be more effective than those where people are pulling in different directions. However, this can come at the expense of diversity and inclusion and might set up a dynamic between (paid) coordinators (all female and of a similar young age in one project) and other volunteers (male and/or older in the same project). Projects that were able to manage interpersonal dynamics within the core team were more successful than those where divergent views on the project's aims led to disagreements and changes in the core team. Good teamwork depends on regular meetings and clear communication to ensure that roles and objectives are understood and accepted by all involved, and that, when several organisations are involved, there is shared understanding of responsibilities.

Teamwork is also affected by the dynamic between full-time and part-time staff. Employing more part-time staff allows projects to constitute a more diverse team, bringing in a variety of skillsets (Accessible Town and City Burgh), or to cover a wider area (Island). However, this comes at a cost, as people working part-time find it more difficult to engage in wider team discussions (all case studies), requiring more effort on the part of the full-time staff to keep them up to date.

One of our case studies was a good example of several diverse organisations working together. They commented that the workshops we organised with them as part of this action research were valuable for them to share their ideas and something they had been meaning to do for a long time but that it took an external group (and some research) to make this happen. Another case study showed us that project teams can change very quickly following disagreement over aims and methods, and when new personnel are introduced to the core team.

H.2.4 Skill of staff /coordinators

Projects with skilled staff and project coordinators were more successful in meeting their aims (and building strong teams and good relations with their communities) than projects that lacked good coordinators. In one case study, a coordinator was appointed shortly after the start of the project as a result of receiving the funding. Within a short time it became clear that their skills were not aligned with what needed to be done, leading to a delay at a key stage in the project, the appointment of a new coordinator, and a change in direction for the project. While the project still successfully delivered on its key aims, it did not achieve the success in changing social norms that the project organisers originally had hoped for. To a large extent this was because time and effort was spent by the Trustees (who were volunteers) in doing work that should have been done by the coordinator, leading to some Trustees becoming burnt out and leaving the project.

In the other case studies, there was usually one key member of staff (sometimes two) who were crucially important to the project's success. In three cases, they were not employed with CCF funds, but paid for by host organisations. This again highlights the importance of partnerships and of the organisational networks in which projects are embedded[98]. It also draws attention to the importance of having long-term funding. The two most successful projects within our case studies had received CCF funding over several years, allowing them to build good skills among project managers and establish effective volunteer programmes. Their activities built on previous experience (such as extending growing activities to new sites) rather than creating completely new activities. The project that received funding for the first time was less competent in these aspects of project and staff management, leading to staff leaving and Trustees feeling overwhelmed. Creating a project team at the same time as delivering activities can therefore prove to be challenging for first-time projects.

Projects funded for the first time should not be expected to be as administratively smooth as those whose funding goes back further. Less experienced projects could be paired with more experienced projects to learn some of the administration skills needed to run a successful project.

H.2.5 Extent of partnerships

CCF projects do not exist in isolation. All our case study projects worked in partnership with other organisations to deliver their projects – sharing volunteers, events, resources

[98] See also Dinnie L., Msika J. & Irvine K.N. (2018). *Climate Challenge Fund: Organisational Networks*. ClimateXChange Community-Led Behaviour Change – Policy Note 3. Available from (accessed October 2020): https://www.climatexchange.org.uk/media/3717/community-led-behaviour-change-policy-note-3-org-networking-feb-2019.pdf.

and audiences.[99] In some cases, this was a formal arrangement in which more than one organisation received joint Climate Challenge funding; in other cases, it was more informal. Partnerships and networking between organisations that share similar aims augments success through the creation of shared activities (film nights, environmental actions) and through bringing together social issues with tackling climate change (such as addressing poverty, poor mental health and encouraging physical exercise). It is important to recognise that collaboration can lead to tensions over who claims responsibility for delivery and success, with larger or more visible organisations sometimes receiving recognition for work done by others.

One element of successful partnership working is those individuals who 'bridge' several organisations because they can act as a conduit for information about what these different groups are doing and how they could work together. Such individuals tend to be highly active, tend to act in a voluntary capacity and tend to be retired or semi-retired and are thus at risk of 'volunteer fatigue'.

Our case studies also relied on the networking abilities of their project managers or other staff. This was particularly easy where these members of the team were well embedded in their community, with high levels of social and cultural capital. However, we also found that individuals could be selective in their choices of collaborators, potentially resulting in the exclusion of particular people or groups in the community. As with the "bridging individuals" mentioned above, the time and effort required to build and maintain collaborations could be significant and is something that needed to be accounted for in project planning.

One consequence of partnership working was the development of shared or complementary goals between organisations. In some cases, this was about strengthening the common vision of multiple environmentally focused organisations in the community. In other cases, it was about recognising how the CCF project's aims could harmonise with the aims of projects focusing on other issues, e.g. community gardening can have a beneficial effect on mental and physical health as well as helping to tackle climate change.

In order to recognise the importance of collaboration for CCF projects' success, as well as the time, effort and skills it requires, there may be a place for awarding joint funding to multiple organisations within the same community. However, this would require a high level of existing coordination between groups and it may be necessary to find additional ways to encourage collaboration, such as through existing multi-sectoral partnerships in health, social care and education.

H.2.6 Clarity of vision

Our case studies demonstrated a variety of differences when it came to whether or not they had a shared vision of their project aims, and how they were able to fit that vision to CCF funding. Two case studies had clear shared visions of what they wanted to achieve and were able to align that vision well with CCF funding. In another case study, there was no single shared vision but rather several complementary objectives that operated alongside one another, brought together under the umbrella of CCF funding. In the other two case studies, it was difficult to discern if there was a shared vision between the project managers, or the project coordinators and the trustees. This led to differences in how projects used CCF funding.

The City Burgh case study had a strong vision relating to tackling poverty and social isolation. The project employees, and to an extent the volunteers, understood this

[99] Ibid. https://www.climatexchange.org.uk/media/3717/community-led-behaviour-change-policy-note-3-org-networking-feb-2019.pdf.

objective and supported it. The project was very effective at combining messages around reuse and recycling in a way that reduced some of the stigma associated with having second-hand goods, especially clothes. Their messages around the need to address climate change were successfully combined with these messages in relation to tackling other social problems.

In our Rural Town case study, the organisation receiving CCF funding had a clear goal around local development and regeneration of the town centre. This project very successfully used CCF funding to support this vision through transport projects. In particular, CCF funding supported a car club (which was used by local businesses as well as residents) and active travel initiatives to encourage cycling. In turn, encouraging cycling led to the creation of a micro-business repairing bikes, and links with a local mental health support group.

In both these case studies, the project had several (three to four employees) who had a shared office space. While we did not observe their working practices in detail, it is likely that these individuals had the opportunity for regular (i.e. daily) contact with each other, shared ideas with each other, and had team meetings to plan other events.

Our Accessible Town case study had no such shared office space, although it did have several employees who worked on the CCF project, along with many volunteers. In this case study there was no overall single vision for the project but rather several different visions, or more accurately, objectives, that the project was trying to achieve. It did this through funding multiple activities, which then ran alongside each other. Occasionally, there was tension between people in different groups within the project. Mostly, however, these activities were autonomous, tended to involve different people, and were complementary rather than competitive in their aims. For example, CCF funding was used to support growing projects, which were then able to support the annual 'Town in Bloom' group (through, for example, providing compost, plants and space). The Town in Bloom group, in turn, received financial support and encouragement from the town centre business district, which realised that their efforts helped to make the town centre more attractive (to residents and visitors). This case study offers a useful example of accepting that different groups have different goals and that, rather than trying to get everyone behind a single objective, it was a more fruitful strategy to have multiple, smaller projects that operated semi-autonomously.

Our other two case studies were different again in how their aims and objectives affected the success of their CCF projects. In the City Centre case, a bit like the City Burgh case, the organisation receiving funding was tackling social issues. However, the project's chosen activities (household energy monitoring and active transport) were difficult to include in its other events and activities (focusing on cultural aspects such as food, dance, music and language) beyond an information board and/or leaflet encouraging people to sign up for the service. In the Island case study, there was a change in personnel running the project which resulted in a change in focus and direction between the start and end of the funding. The extent to which this shift might have happened anyway is of course impossible to predict; what we can say is that, when different people took over the strategic management of the project, the goals and ambition also changed.

In our analysis of the project reports, we noted some potential ways in which the objectives set by the projects related to the overall objectives of the CCF. For some projects, the CCF goals appear to be internalised into the project as a whole. For example, one final report discusses how to "engage new community members in the CCF work", suggesting that the project is working to achieve CCF goals, rather than leveraging CCF funding to achieve their own community-focused goals. In other quarterly reports, one can see the direct influence of feedback received from CCF on project implementation whereby comments made on one quarterly report results in

modifications to activities in the following quarter, and may have provided some project planning support.

In other case study projects, the CCF appears to be utilised as a funding body to support a wider project plan. For example, one final report emphasised community development rather than climate change. This suggests that in this project, CCF may be used less to dictate outcomes but rather is leveraged to achieve and align with already identified outcomes.

Whether the project altered their activities to meet CCF reporting or not is not a judgement on the quality or impacts of the project itself. For the less experienced projects, the support of CCF may have provided important focus for the project direction alongside funding, whereas for more established projects this support was not necessary.

H.2.7 Organisational lifetime /timeline

Among our case studies we noticed that the projects which had received funding previously seemed to have negotiated a number of 'teething problems'. Over time they had become more accomplished at the routine aspects of project management (such as reporting, managing staff and volunteers, managing finances). This meant they were able to spend more time on 'value-added' aspects of project design, such as activities and events, creating a supportive and friendly space for engagement, building up a design brand, training others and replicating the key aspects of their project elsewhere. In other words, there was noticeable evidence for a build-up of expertise over several years which meant that projects that had long-term funding demonstrated more success in engaging their communities with climate change than those that were funded for the first time.

The build-up of expertise over multiple phases of funding could indicate that organisational learning is taking place. In the initial phases of organisational development, a lot of time and energy can be spent on putting together processes and procedures, for example, for recruiting staff or volunteers, using social media and even getting the climate change message across. Once these routine, and often transferable, 'operating practices' have been developed they can be reused with only minor adaptation. This frees up more time for project coordinators to think about how their project is addressing other issues, or different ways in which they could reach people within the project's target community.

Amongst the case studies, there was some frustration expressed that a requirement of funding was that something new had to be added in order to receive follow-on CCF funding which projects felt limited this build-up of expertise. There was a sentiment that if something worked then they should be enabled to carry on delivering it. However, projects which had been funded multiple times had clearly found ways to address this, usually by developing 'extensions' to existing activities, rather than changing their focus completely. This parallels differences in the way the project teams felt constrained, or not, by their funding bid – some seeing it as more of a contract than others).

H.2.8 Access and control over space(s)

Access to, and control over, a physical space is important to project success in engaging their communities in climate change. Projects that had their own space to which public access was permitted, had a base they could use to give out information, express their identity and values, hold meetings and other activities, meet with other organisations, and engage the public. Projects that lacked such a space were less able to engage the public in their activities, and less visible in their communities. Access to a public space is related to project activities, and vice-versa. For example, 'swap shops' or gardening need a physical space to happen, and having access to a permanent shop space also

enables visibility in the High Street or in the community, as well as being able to design the space so that it reflects the values and aims of the project. Other activities, such as home energy audits or car club membership, do not need a shared physical space but, without this physical space, there is less scope for wider public engagement or visibility within the community.

H.3 Wider society's influence on climate change engagement

CCF projects operate within ever-changing local, national and global contexts, with external factors also influencing people's climate change knowledge, attitudes and behaviour. During data collection we observed a number of external events that entered people's consciousness and had a bearing on how local CCF projects facilitated climate change engagement. Most notable of these was the role of the media, news of Trump and the Paris Agreement, changes in the weather, and the role of school initiatives. CCF projects are affected differently by these societal trends and have different levels of flexibility to respond to such changes in national and collective consciousness.

Foremost among these was the role of the media, with interviewees and workshop participants emphasising its impact in bringing powerful environmental messages from across the globe to a local audience. In particular, the documentary television series *Blue Planet II*,[100] presented by 'national treasure' David Attenborough, was broadcast between October 2017 and January 2018, between the first and second data collection points in our fieldwork. In our second period of fieldwork (Spring 2018 onwards) we found it was often mentioned in terms of the extent to which it has helped people to understand the impact of plastic waste on oceans and sea-life:

> *The biggest change that has happened has been the Blue Planet and the plastics. That opened…people actually sat up and said 'Really! What, plastics in the sea?'* (Skillshare Coordinator, workshop, Accessible Town case study CCF project)

As a direct result, "people are becoming much more switched on about plastics" (stakeholder interviewee, Rural Town case study CCF project). Participants felt that television, as a visual medium, was able to convey messages in a hard-hitting way that words alone cannot:

> *[A]n image stays with people and I think this is why David Attenborough's programme about the oceans really hit people […] It can change you in a way that words don't.* (stakeholder interviewee, Accessible Town case study CCF project)

Some participants mentioned that they felt that such images had a stronger effect on the community than CCF projects themselves. For example, when asked about how people make the link between their own behaviour and climate change, one participant said:

> *[It is] the Blue Planet series that David Attenborough has been doing so I mean there was an important plastic message there. That's definitely coming through to the everyday person. …in my work I deal with a lot of everyday people, so I can kind of gauge that they are getting that message. But I think it was because of David Attenborough and not really because of local projects.* (stakeholder interviewee, Island case study CCF project)

[100] See (accessed Deceberm 2019): https://www.bbc.co.uk/programmes/p04tjbtx.

The same sentiment was expressed with regard to other TV programmes, such as the news:

> *[T]hey are seeing things on the news and it's more that that's influencing them rather than what we're doing maybe on a local scale.* (stakeholder interviewee, Rural Town case study CCF project)

Projects perceived that they had been able to tap into the wave of interest in plastics to varying extents, with one individual mentioning that they "could do quite a lot on plastics" but were "kind of locked into delivering our programme" (Project Facilitator, Workshop, Accessible Town case study CCF project). They acknowledged that it is difficult for funders such as CCF to provide sufficient space and flexibility for projects to respond to new trends in the public consciousness, but that being able to do so would enhance the projects' impact:

> *[Plastic is] at the margins of what we do because we were committed to an existing programme. It would be nice to be able to say actually there's a moment here where actually…we can divert an actual resource into that.* (Project Facilitator, Workshop, Accessible Town case study CCF project)

The benefits of timely activities were highlighted in relation to the Island case study, where the film *Before the Flood* was shown to young people the evening before the island's "Green Day":

> *[T]hey set up this Green Day as a way of showing like what was happening on [the island] in order to combat the issues that had been talked about in the film. So, it was like very educational, so from [environmental charity]'s point of view, talking about the plastic in the sea, and then kind of relating that more widely to what [island]'s relationship was with the sea and like those types of things as well.* (interviewee, Island case study CCF project)

Social media played a role in further circulating powerful images of the impact of plastics on ocean life. As one participant mentioned, in reference to an image that had been circulating on Facebook:

> *[Y]ou've got to take people to a stretch of beach and show them the animals tangled in the…paint that picture without sparing any of the…points.* (stakeholder interviewee, Island case study CCF project)

Also receiving widespread attention in the media during the time of the CCF fieldwork was US President Donald Trump's withdrawal from the Paris Agreement. This was perceived by projects to have increased awareness of climate change:

> *It's been a catalyst for bringing climate change into the news, into the forefront of people's minds. He's done more for climate change than anything a lot of people have done in the past year*. (interviewee, Rural Town case study CCF project)

However, some interviewees expressed alarm and frustration that the US President should not be concerned about something that is highly visible in their area:

> *Everybody…after Trump pulled out of that Paris Agreement, I don't think there was anybody I met that didn't say, 'Oh my God.' Everybody was just horrified [...] There's definitely, definitely climate change affecting us here.* (stakeholder interviewee, Island case study CCF project)

Several participants mentioned that changes in the weather were driving home the impact of climate change in a highly visible way. In the Rural Town workshop, a participant described how recent flooding along the coast had influenced people's understanding of the implications:

> *These are…these are much more visible indicators to people that things are'nae working right and that…things need to change. …because it's happening to them directly, or to somebody they know. [...] So there are impacts that are directly affecting people which make people think in a different way. Now it's no' nice but…it has an effect.* (Chair, workshop, Rural Town case study CCF project)

On the island, participants talked about the ferry cancellations as an indicator of tangible local climate change:

> *We can see global warming here with an increase in the high winds, that has a direct impact on [the island] because we don't have ferries when the winds are high and the winds are much stronger now than they used to be, that's definitely down to global warming.* (Stakeholder interviewee, Island case study CCF project)

Finally, school-based initiatives were largely seen by projects and interviewees to be a positive influence on communities in terms of education about climate change and the spreading of new behaviours. Examples ranged from school children reusing plastic (Island), participating in community beach cleans (Island), being shown *Blue Planet II* clips in assemblies (Rural Town) and campaigning against plastic straws (Island, Accessible Town). One participant was hopeful that the knowledge and behaviours acquired by the children were spreading to adults in the community as well:

> *[T]his generational thing between the younger kids and the older kids, and the schools, they actually get taught all of this sort of stuff, climate change stuff in the schools, so it's permeating up.* (Team Member, workshop, Accessible Town case study CCF project)

Another participant questioned the place of environmental learning in a school system that focuses on pupils passing exams:

> *If society was telling us well actually we really would like you to be producing kids who are engaged…confident and interested in the world and alright they don't have the best grades out there but actually do you know what, they're great and they really want to make a difference and they're really energetic then that's what schools would focus on. But that's not what the system is at the moment.* (stakeholder interviewee, Accessible Town case study CCF project)

A key message emerging from this section is that, unsurprisingly, the wider context within which the CCF project is embedded necessarily influences the project's impact. The case studies within this research to a greater or lesser extent made use of local, regional, national and international contextual happenings to push forward their efforts for engagement with climate change. Sometimes this integration went beyond originally planned work as initially outlined in project proposals. To the extent possible, building in – structurally and normatively – some degree of flexibility to project delivery at the outset would enable projects to capitalise on these potential opportunities.

H.4 Conclusions and reflections

The evidence relating to the CCF's community focus, shows that it faces many of the same issues and opportunities as other community empowerment policies.

Firstly, CCF projects are both constrained and enabled by the specific characteristics of their communities. Where CCF projects are proactive in responding to community characteristics, they can end up looking very different, even if their domain of activity (transport, waste, food, energy) is the same. These characteristics can be summarised as the "Where?" (geographic features), the "Who?" (demographics, culture, different groups) and the "What?" (the most important issues) of the community.

Secondly, this research identifies some key organisational characteristics that make a CCF project more successful regardless of the particular activities it is promoting. These include levels of creativity, use of volunteers, facilitating teamwork, skill of staff/coordinators, extent of partnerships, clarity of vision, organisational lifetime and access to spaces(s). These different aspects of organisational capacity were inter-related. Organisations that did well in some areas tended to do well in other areas and vice versa.

Thirdly, all community projects are affected, to a greater or lesser extent, by local issues and changes in the wider national and international context. Some of the case study projects reacted to these changes in their wider context and translated them into activities that were relevant to their community; others did not. This depended on their organisational capacity (see above). It also depended on the degree to which projects felt empowered within their project design to be adaptive and flexible. Some case study projects felt more able to expand beyond the programme of activities they had written into their funding proposal than others.

A significant reflection from this section is that running a successful CCF project is not just about deploying a programme of activities designed to encourage community engagement with climate change. It also includes a range of more general factors that influence success, at the community level, at the organisational level and at wider scales. If the sole purpose of the CCF is to tackle climate change, these more general success factors for community projects could be treated as subsidiary to the factors influencing the success of particular activities. However, the CCF has always been accompanied by a policy narrative of community empowerment.[101] If community-based projects are seen as 'niche innovations' as some literature suggests[102] then 'success' should be evaluated subjectively and not necessarily be only about fulfilling project outcomes defined at the outset. More specifically, for many community projects, success is understood as being just as much about survival and persistence over time, about deepening and strengthening social relations and about inspiring others and being part of a wider process of societal change, as it is about achieving stated aims around narrow definitions relating to tackling climate change.[103] [104] These reflections are not unique to the CCF and apply equally to other community-based policies, but that makes them no less important to take into account in the further development of the CCF as a programme.

[101] Revell, P. & Dinnie, E. (2018). Community resilience and narratives of community empowerment in Scotland. *Community Development Journal,* 55(2): 218-236.

[102] Geels, F. (2002). Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case study. *Research Policy* 31: 1257–1274.

[103] Celata, F. & Sanna, V.S. (2019). A multi-dimensional assessment of the environmental and socioeconomic performance of community-based sustainability initiatives in Europe. *Regional Environmental Change,* 19**:** 939-952.

[104] Feola, G. & Nunes, R. (2014). Success and failure of grassroots innovations for addressing climate change: The case of the Transition Movement. *Global Environmental Change,* 24**:** 232-250.

Appendix I How did the researchers assess project impact?

This appendix informs lessons learned from the project with regard to ways to assess the effect and impact of CCF projects in their communities. In particular, it summarises the research team's own reflections on the selected methods used for the research. It considers the applicability of these methods for use in the future for examining effect at individual and community scale by CCF projects, funders or other researchers. Appendix K (Research approach) provides details about the research design; here the focus is on utility of the selected methods. Note that our use of the word 'assess' here refers to the evaluative judgement about or 'auditing' of performance.

I.1 Interviews

We carried out interviews with project participants at the beginning and end of the funding period to identify the extent of behaviour change experienced by the participants, and the reach of this behaviour change throughout the community. Single interviews were also carried out with stakeholders to understand the reach of the project.

I.1.1 Individual impacts

Use of interviews enabled identification of the wider impacts of CCF projects, and insight into how behaviour change was brought about. This information informed the development of the Climate Change Engagement framework.

Interviews did not identify evidence of behaviour change that could be linked to the CCF projects through interviews. Although some individuals did mention behaviour changes, this could not be attributed to involvement with the CCF. This is likely because the CCF projects did not cause measurable behaviour change (i.e. evidence of a consolidated behaviour), despite having a role in laying the foundation for future behaviour changes.

I.1.2 Community impacts

Through interviews we identified that the reach of impacts of CCF projects into the community was limited, and many interviewees had only a single contact with the projects. The two stage interviews were particularly useful to follow up with individuals that had only a passing involvement with the project.

Interviews with stakeholders were successful in giving a wide overview of the reach and context of the projects within the community. They provided a more objective and critical view on the projects than any of the methods involving project participants themselves.

I.1.3 Research participants' comments about interviews

The reflective workshops provided some feedback on the contribution of the interviews to knowledge (about their project and their communities) and as a mechanism for raising people's awareness of the project:

> ***Interviewer:*** *How was that useful and was it useful, so that kind of external perspective about your project?*
>
> ***Project Manager****: …it was useful, some of the feedback came from [the interviews], that's why we also already modified our leaflets. I think that's very good. It's very useful*. (workshop, City Centre case study CCF project)
>
> *So the good thing when [the researcher] first came and did the interviews, I kind of pulled her aside and said so what are people saying? So, she gave me a wee flavour of what people were saying in the…right at the start which was really*

> *good, because again it was a real eye-opener for 'oh right okay, we did think about that, and think about this'. And then obviously when she came to the second interview she really presented it as what people were saying, and again it's great because you can use all your tools for communication with your customers but you know yourself, generally you know people will always tell you good things. Whereas to find out that in actual fact most of the people she spoke to didn't realise that it was about the environment…that honesty, that truthfulness, that's the only way you can grow is to know the bad stuff. That's how the project is so good is because we listened to the bad stuff and then overcame it. And we want to know what…the truth about it so that we can say right okay well that's something we need to work on.* (Manager, workshop, City Burgh case study CCF project)

> *When [the researcher] did the interviews she met a few folk here in the garden, it was a fine day so she was outside. That got people into our building, into here, and 'oh this is where you are', and it got people thinking about …all the other stuff that we do as well and they've never been in here before. They didn't even know we were based here. So that was really good, it learnt them something new as well, showed off our other projects and stuff.* (Staff, workshop, Rural Town case study CCF project)

The first two quotes clearly show the value that two of the case study project teams derived from the interviews. The City Centre case study modified some of their information leaflets in response to the second workshop's session during which the researchers presented their initial impressions from doing the interviews. The City Burgh case study took the opportunity to speak to one of the researchers as she was doing the interviews and realised that the project could communicate more clearly about the fact that it had an environmental focus. The third quote showed that the process of interviewing community members was intrinsically valuable, bringing people into the project's premises and increasing their reach into the community.

I.1.4 Contribution of interviews to monitoring of CCF projects going forward

For project managers

Conversations with key stakeholders (e.g. council members, headteachers) would help project managers to get a deeper understanding of how their project is perceived by the wider community, and the role of the project within that community. This would be valuable for planning project activities and increasing the reach of projects into the communities. We suggest having informal conversations rather than formal interviews with stakeholders, to gain constructive criticism about the projects, recognising interviewees might be hesitant to provide honest answers and suggestions for improvements to people they know are heavily involved in the projects.

For funders

Conversations with project managers and stakeholders can provide an insight into a project's performance, but do not necessarily elicit information about behaviour change (i.e. consolidated behaviour). Interviews would not be a suitable method for funders to assess the impact of the project due to the high resource and time needs that would be required to carry out robust and effective interviews.

For researchers

Interviews provided a deeper understanding of the types of incremental changes (e.g. discovery of climate-friendly options) that the projects were able to bring about as well as identifying (lack of) consolidated behaviour change, reach of the projects into the community, and how CCF projects interact with other influences on behaviour (e.g. wider

contextual issues such as political or environmental change). A longer period of time between interviews, and questions which target the components of behaviour change, rather than the actual change (i.e. consolidation) in behaviour, could give more insight into the realised impacts of the projects.

I.2 Participant observation

Participant observation occurred during visits by the researchers to undertake interviews and workshops while staying in the case study communities. It included living for a few days in the area where the case studies were located, visiting sites around the area, talking informally to residents and visiting other local projects. It also incorporated informal (non-recorded) conversations and volunteering in project activities.

I.2.1 Suitability for assessing individual impacts

The participant observation was designed to understand the relationships between the people and organisations in the different case study communities, rather than individual impacts.

I.2.2 Suitability for assessing community impacts

Participant observation enabled researchers to build up a wider picture of the community, and the place of the CCF project within that community. It allowed the researchers to ask about the history of a community, and what had happened before CCF funding, including other organisational attempts to bring community climate action to the attention of a wider audience. It was therefore useful in understanding in more detail the relationship between the CCF project and the wider community network of organisations and actors which helped to provide more detail on the opinions and attitudes expressed in the interviews and workshops.

I.2.3 Contribution of participant observation to monitoring CCF projects going forward

For project managers

Participant observation provides a wide view of the CCF projects. It could therefore be useful for project organisers to use observation of their community in a structured way, possibly combining with reflective exercises on how their activities are meeting the needs of the community, or fitting with the objectives of the community and other organisations.

For funders

The wide perspective on the projects provided by participant observation would be valuable in providing context for funders. However, they should not be used to assess projects, because they are not designed to get a full understanding of impacts.

For researchers

Participant observations was extremely useful to the researchers in understanding the wider community and the relationships between CCF and other organisations.

I.3 Community-scale surveys

We carried out a community (as defined by the projects in the first workshop) survey at the beginning and end of the funding period in three case studies (Accessible Town, Rural Town and Island). ‘Before’ and ‘after’ surveys were matched for individuals.

I.3.1 Individual impacts

Surveys could be used to assess individual impacts of projects through following change in answers given in the 'before' and 'after' portions of the survey for individuals. Our analysis however illustrates the challenge of capturing change in consolidated behaviour over a short time scale.

I.3.2 Community impacts

Surveys were a suitable tool for identifying the baseline levels of climate change attitudes within the community, and feelings associated with climate change. They were also successful in identifying an absence of change in climate change related behaviours at the community level.

I.3.3 Research participants' comments about surveys

In the third workshop, participants had some comments on the value of the survey:

> ***Project Manager****: That was really useful. It was very interesting to see, [the researcher] got up the infographics and what not and that was so…I know [Board member] really enjoyed that aspect as well, to be able to see what do people actually…*
>
> ***Interviewer****: Is there anything you remember from that…?*
>
> ***Project Manager****: I remember the wordcloud about…how people felt about climate change so a lot of people were anxious, and there was …there's a certain word that stuck out to me about…inevitable, people just felt like doom and gloom […] And to know that people were feeling so negative, like inevitable, that doesn't really leave a lot of room for hope or leave a lot of…room for [our project] to try and solve or work towards solutions for the problems. So that was interesting for us to have that knowledge that people were coming back with that feedback so that we could approach conversations a little bit differently. People were worried about it, people were anxious, that was useful for us.* (workshop, Island case study CCF project)
>
> ***Interviewer:*** *So you recall we had [the researcher] come in and talk about the questionnaires that we had sent out. Was that useful to hear?*
>
> ***Board Member****: That was very interesting. It was useful to hear how …some of the attitudes locally are a bit worrying to say the least. It's a useful reminder of reality. We need to know that.*
>
> ***Project Manager****: Because we don't often get that external input or perspective on it.* (workshop, Rural Town case study CCF project)

It is interesting to note that in these quotes, the main thing the workshop participants commented on is the information the survey provided on the local 'emotional' landscape in relation to climate change, as represented in the wordcloud.[105]

I.3.4 Contribution of surveys to monitoring of CCF projects going forward

The value of running a survey is strongly dependent on the definition of the target group. Our surveys clearly showed that CCF projects have limited impacts that can be picked up at the scale of the whole community, at least not over the course of a single year. However, surveys specifically targeting project participants may be useful.

[105] See Appendix E (Assessment of community-scale impact), specifically Section E.4 "Feelings about climate change".

For project managers

Community-level surveys could be used by project managers to identify: how many people are aware of the project; which kinds of activities community members might attend; or basic awareness of or feelings regarding climate change. They could also provide baseline insight into current scale of pro-environmental change. To gather useful data these surveys would need to be conducted with people away from the project site, for example at a supermarket. The results of these surveys would be valuable to feed into design of project activities. Surveys would also be valuable as an evaluative tool for individual activities, evaluating enjoyment of the activities, or planned behaviour changes as a result of the activity. Surveys would not be a suitable method for project managers to identify community level changes of their projects.

For funders

Community level surveys would not be a suitable method for funders to evaluate project impact in terms of change in consolidated behaviour because CCF projects are less effective at addressing this aspect of behaviour change nor expected to be impactful at this scale. Additionally, carrying out a robust survey has high resource and time needs.

For researchers

Surveys can provide valuable insight into baseline levels of understanding in communities, capture feelings and concerns regarding climate change, and provide insight into the current state of play in terms of consolidated behavioural practices. However repeating community level surveys would not be valuable for researchers, because the results from the survey administered for the CCF projects identifies that no behaviour change would be expected at this level at least if the focus is on change in behaviour consolidation and at the timescale of one year.

I.4 Reflective workshops

We carried out three workshops with the core project team (all workshops) and project volunteers (workshop two).

I.4.1 Individual impacts

Workshops provided a space for individuals to explore their own understanding of their project's aims and the community the project was embedded in. Project teams were able to consider the extent of behaviour change they were intending to create within their communities and evaluate how they themselves perceived this change. Workshops were, however, not suitable for assessing impacts of projects on individuals because they involved only individuals with strong ties to the project and were not designed to evaluate individual climate-related behaviour.

I.4.2 Community impacts

Workshops held at the beginning of the project were useful for capturing a baseline understanding of the communities that the project teams were intending to serve. Holding workshops with the project teams throughout the period of their funding enabled the researchers to assess the progress of the projects as perceived by the project teams. Examples include the successes and failures of activities, and the challenges arising. Ongoing workshops also enabled the researchers to identify how the project teams identify and develop their aims and objectives over time, and how they incorporated lessons learned into future planning.

I.4.3 Research participants' comments about workshops

- Advantages

During our third and final workshop with the case studies, we asked them to reflect on the value of the reflective workshops to them. Looking across the comments from the different project teams, we have identified **three advantages** of the reflective workshops: taking time to reflect, generating new ideas, and meeting in a different kind of way. Although we present these sequentially, these benefits are obviously interlinked.

Firstly, projects commented on the value of simply taking time out from project delivery to take stock:

> ***Manager****: I think for me it's pretty useful because when you get caught up in the hustle and bustle of every day, you don't often sit down and reflect and you feel like we haven't done that much but then when you talk about it, when you see it written down, it's when you see your reports, you think well we have done a lot… it's bringing all the things that you've done back into giving visibility of it because we don't tend to do that very often, we just tend to get on with the next thing, and the next thing, and the next thing.* (workshop, Rural Town case study CCF project)
>
> *I think that's been the most useful thing to reflect on what's been happening because sometimes you're go go go, and you don't really sit back. … And we're sitting here now like looking back and thinking we've done a lot.* (Project Manager, workshop, Island case study CCF project)
>
> *They're very useful because you…the way the CCF funding works […] one year, two years, even three years isn't really a long time and you get very drawn into the actual delivering of the project. And with best intentions you intend to take the time out to do all this but if it's structured and the dates are in in advance and it's planned it makes you stop and do that...think where you want to be, how you're going, what you're doing because without this session even if we'd talked about it I doubt we would have actually ever physically delivered the sessions because with the best will in the world you get so tied up with delivery that you very often don't take the time to stop and sort of assess how you're doing, what you're doing, and why you're doing it.* (Coordinator, workshop, Accessible town case study CCF project)

These excerpts from three different workshops clearly illustrate how the focus on project delivery, reinforced by short-term funding, makes it difficult for project teams to take the time to reflect on progress to date. In the third quote, the participant highlights the team's intention to hold time to reflect but recognises that it rarely happens in practice. In the first quote, the project manager notes that the process of writing the progress reports can also offer a small opportunity to reflect.

However, writing the progress reports does not deliver the other benefits identified by the project teams, particularly the generation of new ideas:

> ***Hub Manager 1****: Well, that goes back to what I was saying earlier, is getting…you do get more motivated by not just meeting the other hub managers, but also having these sorts of discussions as well with you people to sort of…the ideas suddenly come out of the head! [Laughter]* [workshop, Island case study CCF project)
>
> *I think it's good for us all, though, because when somebody is talking, like you're talking now, it triggers things in my mind and I'm sure when somebody else is talking…which you don't go through that process when you've got 10 minutes to…because you're moving on. Even if you're moving on from my 10 minutes, to*

> *maybe somebody else's project, and then anything…you're whirring your brains and getting triggers, and "oh I hadn't thought"…* (Project Manager, workshop, Rural Town case study CCF project)
>
> ***Education Outreach Officer**: Fresh eyes yeah and also professionals, […] like having you guys as professionals in that field.*
>
> ***Project Manager**: Because you can see things in what we're saying that we don't even see. So you're analysing it and going right so this is what you mean and it's like yeah that's exactly what I'm trying to say. It's being able to pull it apart as well and then put it back together. It's good.* (workshop, City Burgh case study CCF project)

In these quotes, project team members comment on the way in which bringing different people from the project together can spark new ideas: "the ideas suddenly come out of the head!" In the third quote, the team members commented on the fact that having external observers in the form of academics ("professionals") involved, who were able to 'pull ideas apart and put them back together', allowed them to see their project with "fresh eyes".

This highlights the fact that these reflective workshops were different to the other types of meetings held by the project teams:

> *So we've got a continual period of time where each person has their own ideas and their own experiences, and how they felt the project works, and you're bouncing ideas and bouncing thoughts off of one another, and you just don't get that in 10 minutes, or even a 20 minute slot with the Directors … it's not to do that brainstorming, to bounce ideas off each other. So this is what these reflective workshops [bring]* (Project Manager, workshop, Rural Town case study CCF project)

Here, a project manager contrasts their experience of weekly team meetings on one hand and meetings with the organisation's Board of Directors on the other, with the completely different experience offered by the reflective workshops. They discuss how the purpose of the meetings influences the outcomes. This highlights the importance of the approach we took to facilitating these workshops, as highlighted by this quote from a different team:

> ***Education Outreach Officer**: You're saying "is it a lot of time out of your [day?]" but actually, it's paramount that you're reflecting. We do do it but it's [this workshop]…like proper reflection.* (workshop, City Burgh case study CCF project)

This team is the only one who said they already had some opportunities for reflection built in, but they suggested that the workshops offered something additional, a particular "style" or "approach", that allowed the reflection to be more "focused".

- Issues

Despite the clear advantages project teams saw to participating in the reflective workshops, they also identified **two issues**. Firstly, the difficulty of bringing their whole team together. Secondly, the question of who could have facilitated these kinds of meetings if the researchers had not been involved.

In discussing the time required for the meetings and the difficulty of bringing the team together, the main comments came from case studies that employed part-time staff. For example:

> ***Staff**: There's so much other projects going on, that we don't have time to speak to each other half the time. You're just getting on with stuff. And half the time… [Manager]'s only here –*

> ***Project Manager****: Two days a week.*
>
> ***Staff****: … we do have a team meeting once every…is it three weeks, it's changed now. It used to be every week but because of people's time it is now every three weeks. And that's when we all […] sit down and we have like 10 minutes each or 15 minutes each or whatever, just about an hour the meeting lasts, on various things from IT to admin, to all that sort of stuff, to the project, so we learn about what…the other person has done in the last three weeks. So that's important.*
>
> ***Project Manager****: But it's all down to each…rather than three hours of –*
>
> ***Staff****: Exactly! It's just 15 minutes so its nae a lot, it's just a briefing of the project.* (workshop, Rural Town case study CCF project)

There are several ways in which part-time staff find it difficult to take the time for focused reflection. Different work patterns can mean that only one specific day of the week actually works to hold a meeting, and then the meeting has to be kept short because the team members cannot afford to take a large portion of their time to participate. In another workshop, the project manager highlighted the fact that people working part-time have other commitments, which may take precedence over the project's need to bring the whole team together.

The Accessible Town case study also employed part-time staff and also faced the difficulty of bringing its whole team together for the reflective workshops. This difficulty was compounded by the fact that the project was run by a partnership between three organisations, with different working patterns and locations; several participants at the second workshop had never met each other in person, despite being funded under the same CCF grant.

During the discussion with the Island case study team, participants suggested one way of overcoming some of the challenges of collaboration in a geographically dispersed project team:

> ***Hub Manager 1****: Something I wish I'd thought about earlier, I suppose with the internet connections gradually improving around the island, I mean maybe it would have been…with the benefit of hindsight obviously, to do some like hub manager meetings over something like Skype or something, so that everyone is at least in a place where they could contribute.*
>
> ***Hub Manager 2****: Yeah like a group chat.*
>
> ***Project Manager****: Because that's carbon-friendly as well.* (workshop, Island case study CCF project)

By way of contrast to the preceding quotes, the following comes from a workshop with the City Centre case study, which employed staff on full-time contracts:

> *It wasn't any issue at all and I think the timing is good, you know three times a year, like every four months or something for the project is absolutely fantastic you know? It's not too often, once a month would be probably too often you know?* (Outreach Worker, workshop, City Centre case study CCF project)

Even in this case, there is a recognition that there is a cost to reflection and that meeting too frequently might have more disadvantages than benefits.

The second issue that we explored with project teams in relation to holding reflective workshops was the identity of the facilitator:

> ***Project Manager****: I think that's the difference between you guys and CCF though, because as the funding application writer I'm not sure how comfortable I would be with CCF coming in because they obviously fund us. So you came in*

> *as a complete stranger to the project, you have fresh eyes, didn't know anything about it, you don't know if there's funding coming up… Whereas CCF taking on that role, I don't know –*
>
> ***Operations Manager**: Yeah, you would almost feel as if you were trying to prove to them, whereas in this experience it's not about proving, it's about reflection…* (workshop, City Burgh case study CCF project)
>
> ***Project Manager:** …I've been at a lot of facilitated meetings where the best of these type of meetings has always been facilitated by somebody externally because there is no vested interest in the people facilitating it, one way or another, so you have a completely unbiased, unvested interest, somebody just facilitating and I think that always works best.* (workshop, Rural Town case study CCF project)

The project teams had varying levels of concern about the prospect of a reflective workshop being facilitated by someone from the CCF. In the Accessible Town case study, they thought they might "talk about different things" than if the facilitator were not associated with the CCF. In the City Centre case, they thought conversations would be "more open and frank" if not facilitated by the CCF. In the City Burgh case, they felt like they might be "trying to prove [themselves] to them". In the Rural Town, the team even felt that there might be "a conflict of interests". What is clear is that the identity of the facilitator would have an impact on the discussion in a reflective workshop and that this would need to be taken into account when thinking about incorporating reflection into any future development and implementation of the CCF.

I.4.4 Contribution of reflective workshops to monitoring of CCF projects going forward

For project managers

A 'reflective toolkit' containing questions about the community the projects are serving and the intended outcomes of project activities would provide project managers with support in project development which was provided by workshops. Holding full workshops would have high resource and time demands that would detract from other project activities, and are therefore unlikely to be suitable.

For funders

Workshops facilitated by funders could be valuable to understand the intended outcomes of project activities, successes and failures of project activities and how project teams have developed the aims and objectives of the projects throughout the funding period. However, this also has challenges: workshops are resource intensive, and care would need to be taken that workshops were not perceived by the project teams as a 'test' or additional form of assessment.

For researchers

Workshops are a valuable tool for understanding project development over time. We found that successful workshops required sufficient time for joint understanding of concepts and activities, including co-creation of questions and space for reflection on wider issues about project development. We found that workshop outcomes for researchers benefitted from building into the workshop sufficient time for reaching joint definitions of concepts, targeted activities to address specific questions, and providing space for wider discussions of project progress.

I.5 Overall comments on the evaluation

Two stakeholders we interviewed had some insightful comments on the research project as a whole:

> *… I think sometimes it needs someone from the outside to look at the evidence and come up with a conclusion and it's not necessarily what people have said, 'cos if people don't really understand the broader picture and they're only talking about their project, they can only make recommendations from within their project, whereas if you're looking at it as a researcher from the outside, you're aggregating the data and looking for the patterns and trends and saying well, we really need to be thinking about doing this, or trying to do that, or trying to come up with a completely different structure, but it does have to go back to what is it we're fundamentally trying to achieve.* (stakeholder interviewee, City Centre case study CCF project)

> *And the evaluation review that they did last, not this January but the January before, I don't know if you know about that one…it was only ten projects that were used. And to me that was just, you can't do an evaluation review based on ten projects. I was really disappointed by it.* (stakeholder interviewee, City Centre case study CCF project)

The first stakeholder was quite positive, suggesting that it was good to review the CCF in an evidence-based way. This individual also suggested that looking across several projects and taking an external perspective, in the way we have done, was likely to lead to interesting results which might inform a fundamental re-think of the CCF. However, the second stakeholder expressed scepticism about the previous evaluation review that was based on "only ten projects". This highlights the variety of expectations associated with evaluations of the CCF programme.

Appendix J Project case studies

Five community-based projects funded by the Climate Challenge Fund (CCF) formed the case studies for this research. This appendix provides detailed descriptions of the characteristics of these CCF projects and the communities in which they are located, including the aims and focus for activities of each case study project. We close with a detailed description of the approach and selection criteria used for short-listing to five case study projects.

J.1 Case study overview

Each year the CCF funds multiple projects. The aims and objectives of this research meant that an in-depth, real-time, mixed methods approach was most appropriate to address the research questions (see Appendix K Research approach). Given available resources (staff, budget), it was impossible to study all (or even most) of the 113 projects funded in the 2017-2018 round, when this research commenced. In order to select a small sample of projects with a diverse set of characteristics from the wider CCF project population, we considered a range of criteria. Selection criteria included geography, the focus of project activities, level of deprivation and whether projects had previously received funding from the CCF. A specific decision was to include a project that targeted an ethnic minority community.

Given these different criteria and considerations, we selected five projects that combined as many of the criteria in different ways as feasible to ensure a diverse sample of case studies. Table 5 provides a summary overview of the five case study projects. Each case study has been given a pseudonym for use in this research in order to retain a degree of anonymity for the five selected CCF projects.[106]

Table 5: Study overview

Geography (used as project pseudonym)	**Activities Focus**	**Deprivation Level**	**Funding from CCF**
City Burgh	Waste	Most deprived	Continuously funded long-term
City Centre[107]	Transport Energy	Most deprived	Funded in last two rounds
Accessible Town	Transport Waste Food Energy	Least deprived	Funded in three of last four rounds
Rural Town	Transport	Middle	Funded once, but not in previous year

[106] Per arrangements for this research, case study CCF projects are not named.

[107] This CCF project worked specifically with ethnic minority communities.

Geography (used as project pseudonym)	**Activities Focus**	**Deprivation Level**	**Funding from CCF**
Island	Waste	Middle	Never previously funded

J.2 Case study projects

In this section we describe the community characteristics and focus for project activities of each CCF case study.[108] This is a description of the projects as first encountered at the beginning of the 2017-2018 funded year and the beginning of this research.[109]

J.2.1 City Burgh Case Study

Community characteristics

This project operates in a densely populated and relatively deprived area of one of Scotland's cities. According to the Scottish Index of Multiple Deprivation (SIMD[110]) it is in the lowest 20% in the country. The target population is around 58,600 people. Although in a larger urban area, there is a relatively strong sense of community, with people often living in this area all their lives and for several generations. This area has a strong industrial history and heritage, which is reflected in the local employment opportunities which are roughly split between relatively well-paid and skilled industrial labour (steel working, ship building) but which are increasingly being replaced by lower paid and more precarious service work.

Project activities focus

The CCF project is part of a suite of social and learning activities organised by an association looking after the welfare of elderly people. In its current format it emerged several years ago when elderly residents began talking about what a wasteful society we live in, and how people throw things away, especially clothes, rather than swapping or mending them. The project has been continuously funded by the CCF since 2008 with a focus on reducing waste. It is an attempt to bring a swapping and 'make do and mend' culture back to society, and to remove the stigma of second-hand clothing, which was quite strong especially among young people in this community. The project is innovative in creating a boutique feel and branding for the three high street shops that it currently runs, which was a deliberate strategy to get as far away from the stereotype of a charity shop as possible. It is also unique in using a points system to swap clothes, thereby reducing poverty as a barrier to swapping and removing the distinction between different brands (because all clothes have the same number of points). The project also offers a number of social services, including swapping school uniforms and providing clothes by referral, e.g. for people using a foodbank or who want clothes for a job interview. This

[108] Project descriptions have been anonymised as feasible. Arrangements with case study projects per the consent form for participation were that: *Where possible, the research team will anonymise the project in any final outputs. However, there may be situations where this is inappropriate or impossible. For example, when presenting to an audience familiar with CCF projects*.

[109] Case study descriptions were developed by the research team compiled from multiple sources including: criteria used to select the project, project funding application, researcher field notes and data sourced from workshops with projects.

[110] SIMD 2016 (published 31 August 2016, accessed during February 2017) was used for selection and the description of case study projects. On 28 January 2020 the SIMD was updated; for details see https://www.gov.scot/collections/scottish-index-of-multiple-deprivation-2020/.

approach to swapping clothes has an important social consequence in that it helps to alleviate poverty in a dignified manner, as well as tackling climate change.

Alongside swapping clothes, the project also runs “make do and mend” workshops often run by “mature” volunteers. These classes teach skills as well as using donated clothes that are not fit for swapping. The classes have helped the volunteers introduce their skills and knowledge to a new generation, encouraging intergenerational mixing and helping to reduce isolation and loneliness.

The project has a strong educational element. It engages with schools, teaching pupils about the carbon and environmental impacts of the fashion and textile industry, and runs training programmes for its volunteers. The volunteers are an important resource for this project, and many come from outside the local community, attracted by the ethos of the project and the opportunities it offers volunteers. The project also employs a project manager and three full-time staff, including a volunteer coordinator.

The CCF project plans to encourage swapping of clothes through its three swap shops, to hold weekly “make do and mend” workshops and outreach activities in local primary schools. It will also organise a fashion show.

One of the striking things about this CCF project is the way it engaged with its community to refine its activities and find out what people wanted.

J.2.2 City Centre case study

Community characteristics

The project is located in a deprived area of an otherwise relatively affluent urban area. It differs from the other projects in that the specific target population is ethnic minority communities of African, Asian and Polish immigrants to this city. Specifically, this includes: Bangladeshis, Indians, Pakistanis, Nepalis, Sri Lankans, Thais, Turks, Nigerians, Malaysians, Filipinos and Poles. These represent the vast majority of the 35,000 ethnic minority residents of this urban area recorded in the 2011 census.[111] These communities are considered “hard to reach” in terms of changing their climate behaviour.

Project activities focus

The CCF project is run by a social association that seeks to build bridges between ethnic minority populations by celebrating cultural events and days of significance (for example, International Mother Language Day). It also celebrates cultural diversity through food, music and dance at annual events such as One World Day. Additionally, it runs an indoor multicultural football team. These activities mean that many people are aware of this association and the work it does to encourage cultural diversity.

The Association works in partnership with the local authority’s Equality and Diversity Team and a number of other multicultural organisations across the city. It is a member of the CCF’s Ethnic Minority Network.

Delivery of the CCF project is through a steering committee with representation from the communities involved. The 2017-2018 project built on two previous successful funding bids in the two preceding rounds (so no gap in funding) and focuses on energy and transport. The funding has enabled employment of two environmental outreach officers, who rely on volunteers to act as gatekeepers for their community. The CCF project aims to reach 1,000 people in total: 100 households (400 people) through energy visits and a further 600 through workshops and cultural events. Households are recruited through

[111] Census details accessed during February 2017. See https://www.scotlandscensus.gov.uk/ for further details about Scotland’s census.

community groups and charities who represent the ethnic community. Often, but not always, these charities have a basis in religion.

The CCF project plans active travel workshops, cycling promotion, bike loans, home energy visits, energy workshops and engagement at cultural events.

J.2.3 Accessible Town case study

Community characteristics

The target community includes all residents of the town and those living in the surrounding postcode area – a population of around 17,000, of which 7,800 are university students.[112] The town is located in a popular tourist area, and occasionally the presence of the university and tourism can lead to tensions, including planning of ongoing and future development, and use of the town centre. Ongoing tensions between residents, the university and tourism organisations occur over housing, for example, with local residents feeling their housing options are limited because of the demand from students, tourists and second-home owners for accommodation. Further tensions include traffic congestion and litter in the town centre.

Project activities focus

This case study is best described as a three-way partnership between three separate organisations within the town – the university's environmental group, a visitor attraction and an environmental charity supported through the local authority. This partnership is materialised in a newly created shared physical space consisting of a workshop and an outdoor space/garden, located within the visitor attraction. Outwith the project these three organisations have different aims and different constituencies, but together they represent the three main groups present within this town – local residents, students and visitors. The university and the environmental charity have been funded by the CCF in three of the previous four rounds, and received funding in the previous year (2016-2017 CCF funding cycle). The 2017-2018 funding cycle is the first time that these three organisations have together received funding from the CCF.

The project activities are multi-domain, including transport, waste, food and energy. Some activities happen in the shared space, while others take place elsewhere in the town. Activities include, among other things, gardening and food growing, home energy monitoring and advice, glass house energy monitoring, carbon conversations at local schools, annual donate and reuse exchange, skillshare, toolshare, and bike loan and repair. These activities are run by both paid staff and volunteers. In addition to environmental objectives, the project also has the social objectives of providing training and skills to young people, thereby improving employment prospects; improvement of the business district within the town; and improving integration and social cohesion.

J.2.4 Rural Town case study

Community characteristics

The community targeted by this project focuses on an area with a population of around 11,500 people.[113] Just under half the population (4,720) live in town, with the remainder living more remotely, within a 10-mile radius of the town centre. The population demographic is ageing; 30% of residents are over 65 years of age. The main local employment is in manufacturing, retail and health, but the area is thought of as a farming area. Many residents commute outwith the town for employment. SIMD deprivation

[112] Information provided by project in their funding application and during the first workshop.

[113] Information provided by project in their funding application and during the first workshop.

levels range from 3rd most deprived to 7th least deprived. Thus, it is considered a midrange case study.

Project activities focus

The CCF project is focused on transport and is run by a Development Trust which also runs many other projects in the area. The Trust is overseen by a Board of Directors (all volunteers) while delivery of the Trust's activities is the responsibility of employees (a full-time manager, and two part-time staff).

The transport project is a rural car club with three vehicles available for car club members to hire – a hybrid car, low-emissions petrol car and an electric van. The key target groups are the approximately 800 second-car owners in the town, and young people just starting to drive. The CCF project (under the umbrella of the Development Trust) is also active in engagement activities reaching the whole postcode area through, for example, running activities at the local secondary school (around 800 pupils, more than half of whom are from the wider area). Engagement activities aim to raise awareness about alternatives to car ownership and to change the 'car culture' among young people.

Other activities include promoting the car club at the monthly farmers' market and other town-wide events, and promoting the car club in railway stations in adjacent towns that share the main railway link between the two largest cities in this region. The project was funded previously, but not in the 2016-2017 round, i.e. the one before the 2017-2018 round on which this research focused. The Trust also receives and manages funding from a wide range of other sources. In addition to its sustainability objectives, the Trust also aims to help regeneration (e.g. by encouraging local businesses and services to make use of the car club) and contribute to improved health and wellbeing (e.g. by encouraging cycling). Previous rounds of funding included fuel-efficient driver training, and an e-bike rental system, but these have been discontinued for this round due to lack of uptake.

The nature of the car club means there is no pool of active volunteers, although people do help with occasional activities, such as taking the vehicles for servicing.

J.2.5 Island case study

Community characteristics

This island has a resident population of 4,500 (of whom 500 are children) and receives 20,000 visitors annually.[114] Employment is therefore mainly in tourism and tourist services, with some agriculture. Second-home owners form an important part of the community and can be very different in their habits to year-round residents. The island was depopulated during the Highland Clearances in the late 18th century, depopulated again in the 1960s and is currently in a phase of re-population. Both residents and incomers express strong feelings for the landscape and the natural environment; many describe it as the reason why they live here. The island is characterised by many villages, each of which has its own character and focus.

Project activities focus

The CCF project is run by a relatively young charity formed 2.5 years before funding was granted. Membership is free and open to anyone who supports the aims of the organisation. The charity's aims are to deliver environmental projects that benefit the community, encourage environmental sustainability, support sustainable lifestyles and work towards zero waste for the island. It also seeks to provide learning opportunities and training for vocational skills which are of benefit to all ages and abilities. This helps

[114] Information provided by project in their funding application and during the first workshop.

to increase employment opportunities and allows individuals to move towards a low-carbon lifestyle.

The charitable organisation is operated by a Board of five trustees from the local community. It had over 420 members at the beginning of this research and the aim was to raise this to 1,000 over the course of the 2017-2018 CCF funding cycle. The charity regularly includes its volunteers in meetings with the trustees to plan group work and future events.

For the 2.5 years prior to receipt of 2017-2018 CCF funding, the charity ran a community shop in one of the villages on the island, focused on the donation and resale of second-hand goods and other upcycled items. The income generated from this activity allowed the charity to run events to encourage greener and more sustainable living, and to work with other organisations to tackle issues such as marine littering and reducing use of plastic water bottles.

Activities for the CCF project included the employment of a full-time project manager, and part-time coordinators in each village to oversee a smaller version of the second-hand shop in each locality. The 2017-2018 CCF grant was the first funding (apart from very small amounts from local funds e.g. Co-op) received by this charity in its 2.5 year history, and it was the first time it had employed people rather than relying on volunteers. It was hoped that the creation of 'micro-shops' in each village would lead to increased upcycling opportunities for second-hand goods, reduce transport emissions for those living in villages currently without a donation centre, and help to more fully embed the ethos of reuse and upcycling across the island. At the start of the project reusing goods was felt to be a 'social norm' in one village (where the charity operated the shop) but was less common elsewhere. One of the barriers was felt to be transport. The project is therefore multi-domain covering both transport and waste. The project also included engagement activities with local schools, and enhancing existing links with the other environmentally minded organisations and charities on the island through attendance at annual events such as farmers' shows. Additional planned activities included attendance on a carbon literacy course for micro-shop managers and trustees.

J.3 Case study selection process

Selection of the five case study CCF projects was made from a total of 113 projects funded in the 2017-2018 round.[115] We used four core selection criteria: geography, project activities' focus, level of deprivation and whether projects had previously received funding from the CCF.[116] A further decision was to include a project that specifically targeted an ethnic minority community. This ensured inclusion of a community of identity in addition to projects that might be considered a community of place. For pragmatic reasons, we also considered travel distance from Aberdeen, Scotland (where all researchers were based) and the feasibility of administering a community-wide survey.

[115] In keeping with the action research ethos of this research (see Appendix K (Research approach)), selection of case studies was co-ordinated with relevant stakeholders from within Scottish Government and the CCF Administrator responsible for implementation of the 2017-2018 round of funding.

[116] Two criteria (geography, project activities) had been used in case study selection for previous reviews of the CCF (Brook Lyndhurst & Econometrica, 2011; Hilliam et al., 2015). Additional criteria were identified in consultation with relevant stakeholders. References: Brook Lyndhurst & Econometrica. (2011). *Review of the Climate Challenge Fund – Research Findings*, Edinburgh: Scottish Government Social Research. Hilliam, A. et al., (2015). *Review of The Climate Challenge Fund*, Edinburgh: Scottish Government Social Research.

Table 6 details how the five selected case study CCF projects can be characterised through the criteria. The selected projects were broadly distributed across the urban-rural continuum and categories of deprivation; all were located in different local authority areas. Two projects focused solely on one activity (transport or waste), two combined transport with either energy or waste-focused activities while the fifth incorporated activities across four activity domains. All projects except the Island case study had previously received funding from the CCF; one project specifically focused on reaching ethnic minority groups.

Table 6: Characterisation of five case study Climate Challenge Fund projects by selection criteria.

	Geography[1]		**Activities Focus**[2]		**Deprivation**[3]	**Funding History**[4]	**Ethnic Minority**	**Pragmatic Considerations**	
Project pseudonym	Urban-rural	Local Authority	Domain type	Domain number	SIMD	Previous funding	Intended focus	Travel distance	Survey feasibility
City Burgh	U		W	S	Low	Continuous since 2008	No	Mid	No
City Centre	U		T, E	M	Low	Funded in previous two rounds	Yes	Near	No
Accessible Town	ST		T,W,F,E	M	High	Funded in three of last four rounds	No	Mid	Yes
Rural Town	ST		T	S	Medium	Funded once but not in previous round	No	Near	Yes
Island	R		T, W	M	Medium	Never funded	No	Far	Yes

[1] Rural Urban Classification: U = Urban (1-2), ST = Small Town (3-4), R (5-6) = Rural; Local Authority excluded to maintain anonymity of case studies but included to illustrate it was used as a selection criterion.

[2] Project Activity Domain Type: T = Transport, W = Waste, F = Food, E = Energy; Number of Activity Domains: S = Single; M = Multiple

[3] Scottish Index of Multiple Deprivation (SIMD) 2016: Low (1-2), Med (3-8), High (9-10)

[4] Based on 2016-2017 and 2017-2018 funding cycles of CCF

It is useful to note at this point that there are multiple combinations possible from the 113 CCF funded projects (2017-2018) that would still give a diverse spread across the selection criteria. Our purposive sampling strategy was undertaken to select case studies that illustrate the diversity of CCF funded projects.

In the remainder of this section, each criterion is described in brief alongside illustration of the distribution of the 2017-2018 CCF-funded projects as a whole.

J.3.1 Geography

This criterion was based on rural-urban classification and the local authority within which the project was located.

J.3.2 Urban-Rural Classification

Scottish Government's Rural-Urban Classification ranges from 1 (large urban areas) to 6 (remote rural). In 2017-2018 the single largest proportion of CCF funded projects were located in large urban areas (n = 43). Table 7 shows the distribution of 2017-2018 CCF projects according to rural-urban classification.

Table 7: Count of projects (N = 113) funded by CCF in 2017-2018 according to 6-fold Scottish Urban-Rural Classification

Category	Large Urban Areas	Other Urban Areas	Accessible Small Towns	Remote Small Towns	Accessible Rural	Remote Rural
Count	43	25	5	11	12	17

J.3.3 Local authority area

CCF projects can be organised according to local authority area in which they are located. Table 8 shows distribution of 2017-2018 projects by local authority. Projects were funded in 31 of Scotland's 32 local authorities. In deciding our case studies, we wanted to ensure that all our case studies were in different local authority areas.

Table 8: Count of projects (N = 113) funded by CCF in 2017-2018 by Scotland's 32 local authority area

Local Authority Area	**Count**		**Local Authority Area cont.**	
Aberdeen City	2		Inverclyde	4
Aberdeenshire	3		Midlothian	1
Angus	1		Moray	3
Argyll & Bute	4		North Ayrshire	2
City of Edinburgh	8		North Lanarkshire	0
Clackmannanshire	1		Orkney Islands	2
Dumfries & Galloway	1		Perth & Kinross	2
Dundee City	4		Renfrewshire	4
East Ayrshire	1		Scottish Borders	3
East Dunbartonshire	1		Shetland Islands	1
East Lothian	1		South Ayrshire	1
East Renfrewshire	2		South Lanarkshire	2
Falkirk	2		Stirling	5

Local Authority Area	Count		Local Authority Area cont.	
Fife	9		West Dunbartonshire	3
Glasgow City	24		West Lothian	1
Highland	12		Western Isles	3

J.3.4 Project activities focus

CCF projects focus their activities according to five domains: transport, waste, food, energy efficiency and eco-refurbishment of community buildings. These are not mutually exclusive; community-based projects may operate in more than one of these activity domains. In the 2017-2018 round of funded projects, the domain counts were: transport (n = 49); waste (n = 79), food (n = 48); energy (n = 50) and building refurbishment (n = 12). The number of domains in which projects were active ranged from one to five or more with distributions as follows: 35 projects were active in only one domain, 39 in two domains, 32 in three domains, six in four domains and one project in five or more domains.

An additional aspect to this criterion was whether the project was likely to include activities of particular interest for the study objective. For example, diverse, innovative approaches to engaging its community with climate change.

J.3.5 Level of deprivation

Projects can be classified by location according to the Scottish Index of Multiple Deprivation (SIMD)[117] which ranges from 1 (most deprived) to 10 (least deprived). While the SIMD is an aggregate measure of relative regional deprivation and has limitations,[118] it was deemed a reasonable metric for considering this criterion.

During the 2017-2018 CCF funding cycle, deciles 1 and 2 (most deprived 20%) were over-represented (38 projects) and deciles 9 and 10 (least deprived 20%) were under-represented (6 projects). Table 9 shows the distribution of 2017-2018 CCF funded projects according to the 2016 SIMD of their location.

Table 9: Count of projects (N = 113) funded by CCF in 2017-2018 according to SIMD Classification

Decile	1	2	3	4	5	6	7	8	9	10
Count	24	14	11	12	12	15	9	10	3	3

[117] During the research project the 2016 SIMD was available. This was updated on 28 January 2020. For details about SIMD, see https://www.gov.scot/collections/scottish-index-of-multiple-deprivation-2020/.

[118] Problems with using the SIMD classification include the fact that it is aggregated across areas that may include pockets of deprivation (in areas classified as having least deprivation) or pockets of affluence in areas classified as deprived and we have little way of knowing who from these areas is organising and joining the CCF projects. For example, our accessible town case study is classified high on the SIMD (i.e. least deprived) yet we found people working with the project that could be described as being in the most deprived decile of income. In other words, the SIMD classification should not be seen as a measure of individual deprivation.

The imbalance of funding of projects in deprived areas raises ethical questions relating to climate justice.[119] On the one hand, funding projects in deprived communities does often help to create opportunities in places where opportunity is often lacking or absent. On the other, we can question the justice implications of asking people on low incomes or otherwise facing social exclusion to contribute to addressing climate change while those on much higher incomes, and hence more likely to be contributing to high carbon emissions, do not face the same pressures to change their behaviour.[120]

J.3.6 Funding history

Projects can be organised according to whether they have been previously funded through the CCF or not. Based on information obtained about funding in 2016-2017 (i.e. the previous round to the 2017-2018 funded projects on which this research focused), we characterised projects according to their funding history: continuous funding for at least 2 years, funded in the past but not in 2016-2017 (thus a gap in being funded by CCF) and never previously had funding from CCF. Table 10 shows how projects funded in 2017-2018 can be grouped according to their previous record of funding from CCF.

Table 10: Funding track record for projects (N = 113) funded by CCF in 2017-2018

Funding situation	Funded in 2016-2017	Funded in the past but not 2-16-2017	Never previously funded
Count	60	17	36

J.3.7 Pragmatic criteria

In short listing to five CCF projects we also considered pragmatic issues such as travel distance, sampling considerations for data-gathering methods, and a back-up set of case studies.

Travel distance

The research team also took a pragmatic approach to conducting this research by considering travel distance from Aberdeen and the impact this would have for budgets associated with travel and overnight accommodation for methods to be used in the research approach. We considered that CCF projects located in Grampian, Moray or Angus (n=9) would not require an overnight stay by the research team, those in Central Belt, Perth, Stirling, Dundee and Fife (n=72) would require at least 1 night and those in Highland, Argyll & Bute, the Islands and everywhere else (n=32) would require at least 2 nights overnight stay.

Sampling considerations

A second practical, methodologically relevant consideration was the need to select case studies where a meaningful sample of the target community could be drawn in order to evaluate the extent of community response. For the questionnaire survey, we focused on those CCF projects whose target community was described as a geographically defined population (based on postcode sector). In other words, the target of influence for any community-level survey needed to be based on the population as defined by a

[119] Aitken, M. & Creamer, E. (2018). *Climate Justice Begins at Home: Implications for domestic climate change mitigation policy*. Edinburgh.

[120] Dinnie, E., Hague, A., Msika, J., Irvine, K.N. & Wilson, R. (under review). Negotiating social and climate justice in community-based initiatives. *Spatial Justice.*

geographical area, as opposed to a community of interest. Additionally, we needed to consider the likelihood of being able to reach a wide mix of community members for qualitative interview.

J.3.8 Reserve case studies

Lastly, we selected a short list of a further six CCF projects in the event that any of our first choice projects did not wish to participate. We did not need this as all our initially selected CCF projects agreed to take part in and commit to this research.

J.4 Conclusions and reflections

In order to select a small number of case studies from a much larger population of funded projects we applied several criteria to the Climate Challenge Fund (CCF) projects funded in 2017-2018, including socio-economic factors such as urban-rural classification, levels of deprivation, inclusion of an ethnic minority and distance from researchers based in Aberdeen, Scotland. We also applied project characteristics such as type and number of activities, and funding history with the CCF programme.

Appendix K Research approach

This appendix describes the processes and methodology used to conduct this research. The guiding rationale was that the research was to be a long-term, real-time, in-depth, action research mixed methods study. This enabled capture of how and why Climate Challenge Fund (CCF) projects facilitate and make engagement with climate change possible (or not) with their respective communities. The research design consists of three main elements:

- Action research workshops with each selected case study CCF project at beginning, middle and end of a one-year funding period;
- Semi-structured interviews with community members and stakeholders; and
- Community survey of environmental attitudes to and feelings about climate change and environmentally-friendly behaviours (in three of the selected case studies).

The project design was developed to explore the depth and reach of CCF projects in their communities, from multiple perspectives, within a limited timeframe and within budgetary limits. Through this insight, practical and transferable lessons were sought to understand the 'what' and 'how' of CCF projects' efforts to foster a low-carbon transition through the scale of communities.

K.1 Project set-up

K.1.1 Preparatory meetings and decisions

Integrating the activities of the research team with the timelines, processes and expectations of Scottish Government policymakers/researcher partners, the CCF administrator (Keep Scotland Beautiful) and ClimateXChange, Scotland's centrer of expertise connecting climate change research and policy (subsequently referred to as research stakeholders) was key to successfully delivering this project. To this end, the set-up period included significant engagement with stakeholders in the first three months to carry out the following tasks:

- Reviewing and agreeing the proposed research for the first year of the project;
- Communicating with CCF applicants about the possibility of and process for being included in a research programme;
- Selecting appropriate case studies from the 2017-2018 funded CCF projects; and
- Co-developing an ethically rigorous research process.

K.1.2 Case study selection

Five of the 113 community-based projects funded by the CCF in 2017-2018 were selected as case studies for in-depth analysis. Criteria for selection were developed in collaboration with research stakeholders and informed by previous research.[121, 122]

[121] Brook Lyndhurst & Ecometrica. (2011). Review of The Climate Challenge Fund: Full Report [Report]. Retrieved from Scottish Government Social Research website (accessed October 2020): http://www.scotland.gov.uk/Publications/2011/06/28142748/0.

[122] Hilliam, A., Moir, S., Scott, L., Clark, T., Smith, I., & Changeworks. (2015). Review of The Climate Challenge Fund [Report]. Retrieved from Scottish Government Social Research website (accessed October 2020): http://www.scotland.gov.uk/Publications/2011/06/28142748/0.

Criteria took account of a project's: (i) geography (e.g. urban/rural, region of Scotland); (ii) project activities (type and number); (iii) level of deprivation according to Scottish Index of Multiple Deprivation;[123] (iv) funding history with CCF (always funded; funded previously but not every year; never funded by CCF); and (v) pragmatic criteria for travel and overnight stay for research team. For a detailed description of the selection process and the case studies, see Appendix J (Project case studies).

K.1.3 Literature review

Integrating insights from existing research on community climate action in general and combining them with the existing CCF-specific reviews informed our method development and generated further lines of enquiry that were pursued throughout the rest of the research. The literature review focused on:

- Two previous evaluations of the CCF;[124]
- Existing research on the CCF, for example Markantoni and Woolvin's (2015) review of community-focused low-carbon policies,[125] and also more specific research on CCF case studies;[126]
- Recent work on evaluating the impacts of community-based sustainability initiatives;[127] and
- Theories of change literature: including psychological models that have been applied to environmental issues;[128] practitioner-orientated implementation

[123] SIMD 2016 (published 31 August 2016, accessed during February 2017) was used for selection and the description of case study projects. On 28 January 2020 the SIMD was updated; for details see https://www.gov.scot/collections/scottish-index-of-multiple-deprivation-2020/.

[124] Brook Lyndhurst & Econometrica. (2011), op. cit.; Hilliam et al. (2015), op. cit.

[125] Markantoni, M. & Woolvin, M. (2015). The role of rural communities in the transition to a low-carbon Scotland: a review. *Local Environment*, 20(2): 202–219.

[126] See, for example, Creamer, E. (2014). The double-edged sword of grant funding: a study of community-led climate change initiatives in remote rural Scotland. *Local Environment*, 20(9): 981–999; Creamer, E.C. (2015). *'Community': The Ends and Means of Sustainability? Exploring the position and influence of community-led initiatives in remote rural Scotland*. PhD Thesis. The University of Edinburgh; Aiken, G.T. (2014). Common Sense Community? The Climate Challenge Fund's Official and Tacit Community Construction. *Scottish Geographical Journal*, 130(3): 207–221; Tollan, V. (2013). *Positioning 'Community' in Sustainable Development Policy and Practice*. University of St Andrews.

[127] See, for example, Celata, F., Dinnie, L. & Holsten, A. (2019). Sustainability transitions to low-carbon societies: insights from European community-based initiatives. *Reg Environ Change,* 19**:** 909–912; Hobson, K., Hamilton, J., Mayne, R., Giangrande, N. & Church, C. (2015). *Monitoring and Evaluation for Sustainable Communities: Final Project Report*, Oxford: The School of Geography and Environment, University of Oxford; Reed, M.S., Fraser, E.D.G. & Dougill, A.J. (2006). An adaptive learning process for developing and applying sustainability indicators with local communities. *Ecological Economics*, 59(4): 406–418.

[128] See Ajzen, I. (1991). The Theory of Planned Behaviour. *Organizational Behaviour and Human Decision Processes*, 50: 179–211; Darnton, A. (2008). *Practical Guide: An Overview of behaviour change models and their uses*, London: Government Social Research Unit; Stern, P.C., Dietz, T., Abel, T.D., Guagnano, G. & Kalof, L. (1999). A value-belief-norm theory of support for social movements: The case of environmentalism. *Human Ecology Review*, 6(2): 81–97; Schwartz, S.H. (1992). Universals in the Content and Structure of Values: Theoretical Advances and Empirical Tests in 20 Countries. *Advances in Experimental Social Psychology*, 25: 1–65; Schwartz, S.H. (2009). Basic Human Values. *Sociologie*, 42: 249–288.

theories;[129] sociological models;[130] information needs framework;[131] integrative practitioner-focused frameworks.[132]

K.1.4 Ethics

Ethical approval for the project was received from the James Hutton Institute Research Ethics Committee. The application addressed key ethical considerations associated with the proposed methods, including:

- Providing opportunities for selected case study CCF projects and participants to withdraw from the research;
- Obtaining project team and community members' consent to participate;[133]
- Plans for how data would be stored, (e.g. anonymisation, confidentiality, security); and
- An approach to working with potentially vulnerable populations.

This included the development of consent forms for CCF projects as well as individual participants.

K.2 Methodological approach

Given the importance of understanding how interventions to foster change in behaviour work as well as the contexts within which they are being implemented, the research methodology drew on guidance for the evaluation of complex interventions.[134] The

[129] See, for example, Common Cause Foundation. (2016). Values and Frames. Available at (Accessed October 2020): http://valuesandframes.org; Public Interest Research Center. (2011). *The Common Cause Handbook*, Public Interest Research Centre.

[130] See, for example, Shove, E., Pantzar, M. & Watson, M. (2012). *The Dynamics of Social Practice: Everyday Life and How it Changes*, SAGE Publications; Hargreaves, T. (2011). Practice-ing behaviour change: Applying social practice theory to pro-environmental behaviour change. *Journal of Consumer Culture*, 11: 79–99.

[131] See, for example, Irvine, K.N. & Kaplan, S., 2001. Coping with change: The small experiment as a strategic approach to environmental sustainability. *Environmental Management*, 28(6), pp.713–725 ; Kaplan, R. & Basu, A. (2015). The Reasonable Person Model: Introducing the Framework and the Chapters. In R. Kaplan & A. Basu, eds. *Fostering Reasonableness: Supportive environments for bringing out our best.* Michigan, USA: Maize Books; Kaplan, R. & Kaplan, S. (2008). Bringing Out the Best in People: a Psychological Perspective. *Conservation Biology*, 22(4): 826–829; Moscovici, S. (2001). *Social representations - Explorations in social psychology.*, New York: New York University Press.

[132] See, for example, Lancaster, O., Candea, P., & Goodsir, S. (2015). *Shifting Normal: How to design projects that change things for the better* (Online Guide). Scottish Government. Available from (accessed December 2019): https://www.gov.scot/publications/shifting-normal-design-projects-change-things-better/; Michie, S., Atkins, L. & West, R. (2014). *The Behaviour Change Wheel: A Guide to Designing Interventions*, Silverback Publishing.

[133] Participant consent forms explained that data collected would be used for research and evaluation purposes including presentations, journal articles and reports, and that these might include quotes. As part of the consent process for workshop participants, they were asked to indicate how they wisehd to be referred to if a direct quote was used (e.g. team member, volunteer, staff, co-ordinator) and advised that while the research team would strive to anonymise the project in final outputs, there may be situations where this might not be achievable, for example, audiences familiar with CCF projects.

[134] Craig, P., Dieppe, P., Macintyre, S., Michie, S., Nazareth, I. & Petticrew, M. (2008). *Developing and evaluating complex interventions: New guidance*, London: Medical Research Council; Moore, G.F, Audrey, S., Barker, M., Bond, L., Bonell, C., Hardeman, W., Moore, L., O'Cathain, A., Tinati, T., Wight, D. & Baird, J. (2015). Process evaluation of complex interventions: Medical Research Council

methodology is underpinned by pragmatism,[135] a research paradigm which emphasises adoption of methodological approaches that most appropriately address the research questions within their given context. As such, the methods and tools adopted in this research were inclusive, drawn from across research traditions (e.g. deductive and inductive; qualitative and quantitative) as appropriate for understanding the impact and processes for delivery of a complex intervention. Additionally, multiple theoretical frameworks were drawn upon to inform method development and implementation, data analysis and interpretation.

Key elements of the research approach:

- Complex intervention evaluation
- Pragmatism i.e. Methods adapted to the questions
- Case study research
- Longitudinal time frame
- Action research
- Reflective approach

The research considered both the impacts of the CCF projects and the processes of change. Examples of impacts of CCF projects includes changes in behaviour that move communities to lower carbon living, changes in knowledge of the links between behaviour and climate change and changes in community social norms. The research was open to gaining insight into other impacts that may or may not be related to climate change. In terms of the processes of change, the research sought to understand the context, barriers and facilitators of such change.

Given the diversity of CCF-funded projects and the 'real-world' nature of the research (i.e. researching projects as they are implemented) a case study strategy incorporating an action research element was adopted. Yin[136] describes a case study as 'an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context'. In this instance, the study investigated individual CCF projects within the context of the community in which the projects were being implemented. A set of five individual case studies offered insight into the impacts and processes for different types of CCF projects within different contexts.

A longitudinal time frame was also adopted, following the five case study CCF projects over the course of their funding. This was adopted in order to facilitate understanding of effects over time and highlight different development pathways throughout the project delivery phase.

The action research element provided a participatory dimension to the evaluative research; Cousins and Earl (1995; cited in[137] p.217) describe this combination as 'participatory evaluation'. It seeks to purposefully 'bring together action and reflection,

guidance. *BMJ*, 350: h1258–h1258.

[135] Creswell, J. & Clark, V. (2011). *Designing and Conducting Mixed Methods Research* 2nd ed., Los Angeles, CA, USA: SAGE Publications.

[136] Yin, R.K. (2009, p. 18). *Case Study Research: Design and Methods - Volume 5 of Applied Social Research Methods*, Los Angeles; London; New Delhi; Singapore: SAGE Publications.

[137] Robson, C. (2002). *Real World Research* 2nd ed., Malden, MA; Oxford, UK; Carlton, Australia: Blackwell Publishing.

theory and practice…in the pursuit of practical solutions'.[138] Figure 13 provides an illustration of how the different members of the project community – researchers, CCF policy-makers and CCF projects – collaborated and undertook 'co-research' to achieve a desired aim, using an action research approach. The evolving cycles of 'action and reflection' was adopted in order to allow the community of co-researchers to 'test practices and gather evidence' during the action phase while during reflection 'they make sense together and plan further actions'.[139]

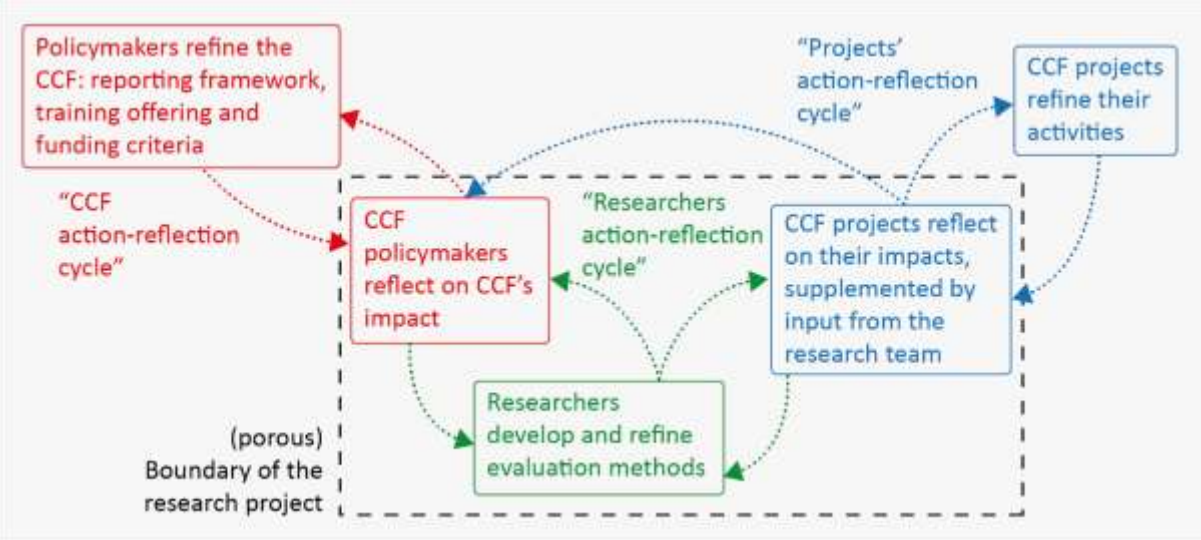

Figure 13: The three action-reflection cycles within the research

K.3 Evaluation toolkit

For each case study our evaluation toolkit comprised:

- **Action research workshops** with individuals from the CCF project team;
- **Community interviews** with individuals within the CCF project's local community, once at the start of the project and once at the end;
- **Stakeholder interviews** with key individuals with knowledge of the community;
- **'Before' and 'after' surveys** with a representative sample of households from the CCF project's wider target community (with 3 case studies);
- **Document analysis** of each CCF project's submitted funding proposal and quarterly progress reports; and
- **Participant observation** during visits made to the case studies.

This mixed methods approach allowed for triangulation of insights from different sets of methods through analysis to develop in-depth understanding of scope and extent of reach and processes of change over time.

K.4 Action research workshops

Three participatory action research workshops were conducted with each case study to coincide as closely as possible with the CCF funding period (April 2017-March 2018).

[138] Reason, P. & Bradbury, H. eds. (2008, p. 4). *The SAGE Handbook of Action Research* 2nd ed., Los Angeles; London; New Delhi; Singapore: SAGE Publications.

[139] Ibid, p. 1.

Table 11 provides detail of the timing for and numbers of individuals who attended each workshop.

Table 11: Workshop timings and number of participants per case study

Action research workshop	City Burgh	City Centre	Accessible Town	Rural Town	Island
1	June 2017 Core team, n=4	May 2017 Core team, n=5	April 2017 Core team, n=3	June 2017 Core team, n=3	May 2017 Core team, n=4
2	November 2017 Wider team, n=8	November 2017 Wider team, n=6	November 2017 Wider team, n=10	November 2017 Wider team + stakeholders, n=8	October 2017 Wider team, n=7
3	February 2018 Core team, n=3	February 2018 Core team, n=5	March 2018 Core team, n=4	March 2018 Core team, n=3	March 2018 Core team, n=4

As soon as possible after the CCF 2017-2018 funding cycle commenced (April-June 2017), the research team conducted an initial workshop with each case study's core team, including any staff in post, key volunteers and the people who wrote the funding bid. This enabled the research team to begin to develop a working relationship with the case study projects which provided some baseline data to inform the rest of the research, specifically:

- CCF project teams' definition of their target community and discussion of how it could be reached for involvement in the research;
- CCF project teams' assessment of the current state of this community's levels of engagement in climate-friendly behaviours, awareness of climate change and relevant actions to be taken, as well as existing social norms around climate change; and
- CCF project teams' "Logic Models"[140] or "Pathways to change".[141] These make explicit project teams' assumptions about how they think their planned activities will create change in their community.

Approximately half-way through the funding year (Oct-Nov 2017), a second workshop was held with each case study, drawing in a larger number of people beyond just the project's core team (e.g. key volunteers involved in delivery of activities), to reflect on their activities over the previous six to eight months. Discussions were focused around changes in the target communities' adoption of climate-relevant behaviours, awareness of climate change, levels of engagement in project activities, and changes in social

[140] See (accessed October 2020): https://www.cdc.gov/eval/logicmodels/index.htm.

[141] MESC Project. (2014). *A step by step guide to Monitoring and Evaluation* Vers. 1.0., The School of Geography and Environment, University of Oxford.

norms. Using the "Logic Models" developed in the initial workshops, the researchers worked with these individuals to examine the effectiveness of the activities being implemented in terms of creating change in their communities. This second workshop was structured around insight drawn from document analysis of CCF project reports. Additionally, as available and appropriate, initial findings from the community interviews and initial survey findings alongside the research team's own reflections drawn from field visits were shared.

This second workshop formed the key action research component of the research study. Reflecting mid-way through the project delivery process gave CCF projects the opportunity to identify activities that worked, those that did not work and changes that needed to be made. Comparing and collating the lessons learned by all the case study projects allowed the research team to start identifying characteristics of successful CCF projects.

Towards the end of the project funding period (Feb-March '18), the research team carried out closing workshops with the core members of each CCF project team. When possible, the same individuals who attended the first workshop attended this one. These final workshops explored:

- The various effects the CCF projects had on their communities' climate-related awareness, behaviours and social norms, making reference to the "Logic Models" developed at the start of the project;
- Barriers to delivery and success factors, learning lessons for future community-based climate behaviour change projects; and
- The wider impact of the CCF project.

For the design of these workshops we drew on the Reasonable Person Model[142] and participatory action research guidelines[143] to develop a workshop framework within which we implemented a selection of self-evaluation tools and techniques developed for community-based sustainability initiatives[144] and behaviour change interventions (e.g. Michie et al. 2014).[145] It was important therefore that the workshops were structured as open, participatory spaces for reflection and thinking about what went well, as well as why some activities might not have worked in the way that project staff and volunteers

[142] Kaplan, R. & Basu, A. (2015). The Reasonable Person Model: Introducing the Framework and the Chapters. In R. Kaplan & A. Basu, eds. *Fostering Reasonableness: Supportive environments for bringing out our best.* Michigan, USA: Maize Books; Kaplan, R. & Kaplan, S. (2008). Bringing Out the Best in People: a Psychological Perspective. *Conservation Biology*, 22(4): 826–829.

[143] Reason, P. & Bradbury, H. eds. (2008). *The SAGE Handbook of Action Research* 2nd ed., Los Angeles; London; New Delhi; Singapore: SAGE Publications; Msika, J. (2016). Dialogic Research for Sustainability? Reflections on the theory and practice of re-presenting data to participants. *CECHR Symposium, Dundee*, (24th February 2016). Available at (accessed October 2020): https://www.academia.edu/26919158/Dialogic_Research_for_Sustainability.

[144] See, for example, Lancaster, O., Candea, P., & Goodsir, S. (2015). *Shifting Normal: How to design projects that change things for the better* (Online Guide). Scottish Government. Available from (accessed December 2019): https://www.gov.scot/publications/shifting-normal-design-projects-change-things-better/; MESC Project, 2015. Resources. Available at (accessed October 2020): https://mescproject.wordpress.com/resources/; Celata, F., Dinnie, L. & Holsten, A. (2019). Sustainability transitions to low-carbon societies: insights from European community-based initiatives. *Reg Environ Change,* 19**:** 909–912; Transition Network (n.d.), available from (accessed October 2020): https://transitionnetwork.org/.

[145] Michie, S., Atkins, L. & West, R. (2014). *The Behaviour Change Wheel: A Guide to Designing Interventions*, Silverback Publishing.

had hoped. It was important that this was a collective exercise which gave project staff the chance to express their thoughts and share them with others in the team.

K.5 Community interviews

Qualitative semi-structured interviews were conducted with members of the community in each of the five case study areas, once near the beginning of the CCF-funded period (T1) and once towards the end or shortly after the project had ended (T2).

The aims of these interviews were to provide the research team with:

- A wider community perspective on the projects and their impact over time, from a more diverse sample than was afforded by the workshops alone;
- A comprehensive understanding of the reach of CCF projects in their local environment across different social groups; and
- Indications of the extent and nature of both intended and unintended impacts on individual behaviours.

Interview participants were selected on suggestions from project coordinators and through snowball sampling to provide a broad spectrum of voices and ranged in age, gender and social group. In addition, we sought to include: (i) people active in the CCF project; (ii) people who had heard of the CCF project but were not actively involved; and (iii) people who were part of the CCF project's target population but had not heard of the project.

Where possible, T2 interviews were conducted with the same people interviewed at T1. Where this was not possible, for example because a T1 participant had left the area or was not available during the T2 fieldwork period, additional interviewees were sought to provide further insights.

Table 12 provides the dates during which interviews were conducted in each case study, the number of interviews carried out and the number of participants (some interviews were with more than one person). The final column under T2 ('Of T1') gives the number of people re-interviewed.

Interviews were semi-structured and in-depth, generally lasting 45 minutes but ranging from 30 to 75 minutes.

T1 interviews asked about:

- Participants' relationship to the CCF project. Are they involved in it? Have they participated in it? Have they heard of it?
- What do they think the CCF project is trying to achieve?
- How do they see themselves in relation to the project?
- What are their expectations for the next year in relation to the project?

T2 interviews asked about:

- What do participants think the CCF project has done in the past year?
- What has changed in the community/local area/among people they know in terms of climate change behaviours, beliefs, attitudes and knowledge?
- Participants' perceptions of the impact of the CCF project.

Table 12: Dates and numbers of community interviews by case study

Case study	T1 interviews			T 2 interviews			
	Dates	Interviews	Participants	Dates	Interviews	Participants	Of T1
City Burgh	June 2017	11	12	April 2018	11	11	7
City Centre	June to September 2017	9	9	June to July 2018	5	5	4
Accessible Town	May to June 2017	9	11	April to May 2018	7	10	10
Rural Town	July to October 2017	10	12	May to June 2018	7	10	10
Island	May to June 2017	12	12	March 2018	8	8	7
TOTAL		51	56		38	44	38

Adopting a semi-structured approach to the interviews afforded scope to follow relevant topics introduced by participants and explore unforeseen aspects, in addition to covering the key questions above.

K.6 Stakeholder interviews

To gain further understanding of the reach, extent and legacy of impacts of the CCF projects, one-to-one, in-depth interviews were conducted with 2–3 stakeholders in each of the case study projects' communities. These were done towards or following the end of the CCF-funded period.

Stakeholders comprised individuals who were not directly involved in implementing the CCF project but who had knowledge of the local community, for example, community development workers, schoolteachers and religious leaders, and were identified by the researchers during T1 fieldwork. These interviews provided an additional perspective on the effects that the projects had in their communities.

Table 13 shows the dates when stakeholder interviews were conducted in each case study and the number of interviews.

Stakeholder interviewees were asked about:

- Their knowledge, understanding and awareness of the CCF project and its aims and objectives;
- In their view, whether there had been change in the community as a result of the project, and why did they think this change occurred (or not occur);
- Whether they thought there were external influences, or events on a larger scale, that made the project more or less likely to engage people;
- Whether in their opinion there was anything about the case study location that made the project more or less likely to have an impact; and

- Whether they thought that community-based initiatives, such as the CCF project, can create change.

Table 13: Dates and numbers of stakeholder interviews by case study

Case study	Dates	Interviews
City Burgh	April 2018	2
City Centre	August and September 2018	2
Accessible Town	May 2018	3
Rural Town	May 2018	3
Island	June and September 2018	2
TOTAL		**12**

Like the community interviews, stakeholder interviews were semi-structured, allowing participants to talk about factors that may not have been anticipated by the prepared set of interview questions.

K.7 Analysis of qualitative data

Community and stakeholder interviews were professionally transcribed. Workshop discussions and materials (e.g. flip chart notes, post-it notes) were selectively transcribed, focusing on the elements most likely to yield insight to address the research questions. All transcribed material was imported to NVivo 12 Plus qualitative data analysis software to allow for rigorous analysis by the research team. Following pilot coding of a small number of interviews and workshop materials,[146] the research team met to develop a Coding Framework that reflected initial findings and echoed the primary research questions and objectives set out in this research study. The coding framework comprised eight broad categories (Table 14).

[146] The process included identification of an initial set of categories, several iterative piloting, revision and refinement steps based on coding of a small sets of interviews followed by testing and further refinement through coding of workshop material.

Table 14: Broad categories used for interview coding

Category	Description
Wider influence	References to the broader context surrounding the project
Community characteristics	Aspects of the case study community
Organisations and groups	References to other community organisations
Project design or approach	What the project did and why
Evidence or perceptions of change	Any change attributable to the project's activities
Models of (societal) change	People's ideas about how change happens
Methods for assessing influence and impact	References to how we can assess the influence of CCF projects
Understandings of climate change and sustainability	Discussions of climate change and environmental issues

All interview and workshop transcripts were initially coded to these categories. Preliminary findings and reflections were discussed at a follow-up meeting of the research team.

A second round of coding was subsequently undertaken within each of the main categories. The approach to this detailed coding was more "grounded", allowing themes to emerge from the interview content. A third meeting of the research team presented key findings, areas of crossover and difference and emerging lessons, which became the foundation for the qualitative analysis presented in this report.

K.8 Baseline and follow-up surveys

A survey was used in order to incorporate a wider set of voices into the research study. Such voices could include members of the local community who might not engage in the work of CCF project at all or might not have even heard of it. The target population of the surveys was composed of the communities of place. Conducting a mail-out survey within a clearly defined area was only possible in three out of the five case studies, where the project's target population could be considered to be maintained within a specific postcode area, as determined in discussions with the relevant CCF project teams. These were the Rural and Accessible Towns and the Island case studies.

Surveys were run in Summer 2017 (as a 'baseline' assessment) and Summer 2018 (as a 'follow-up' assessment) to assess the presence (or not) of changes occurring during the duration of the project. The value of conducting the follow-up survey after the CCF project had completed was to explore potential longer-term effects of the project.

The surveys add a structured, quantitative, questionnaire-based assessment of behaviour changes in the community as a whole. They included sections focusing on:

- Everyday behaviours
- Attitudes towards climate change

- Thoughts and feelings about climate change
- General household and individual information

The material in sections M8.1 to M8.5 provides a technical supplement to the main presentation of the survey results presented in Appendix E (Assessment of community-scale impact). Provided here are further detail on the sample, followed by a detailed look at the methods, analysis and results in relation to (i) pro-environmental behaviours, and (ii) attitudes to climate change.

K.8.1 Details of sample

A sample of households was drawn from the postcode areas defining the population in three case study areas in summer 2017. A single individual over the age of 18 was drawn from each household sampled. Of the available data in the Experian database of households, 43% (1500) of households in the Rural Town, 29% (1500) of households in the Accessible Town, and 100% (1332) of households in the Island case study, were sampled.

The aim was to achieve a minimum initial response rate (RR) of 10% at baseline (2017) in each community surveyed, and we had expected that the provision of an incentive would be sufficient to return this. However, in the case of both the Rural and Accessible Towns this was not the outcome. The baseline response rate (2017 survey) was 5.9% (N = 89) for the Rural Town, 6.2% (N = 93) in the Accessible Town, and 17.3% (N = 231) in the Island (Table 15).

In order to maximise the level of retention between the baseline and follow-up surveys, we provided participants with a financial incentive of £10 for filling in both surveys. The sample retained at follow-up (2018 survey) was 69 for the Rural Town, 79 for the Accessible Town, and 183 for the Island, which is an effective retention rate of 90%, 96% and 92% respectively between the 2017 and 2018 surveys. The analysis presented in the rest of this section includes only individuals that responded to both surveys.

Table 15: Details of the survey sample

Case Study	Number of baseline surveys sent	Baseline survey responses (% of baseline surveys sent)	Number of follow-up surveys sent* (% of baseline surveys sent)	Follow-up survey responses (% of baseline surveys sent / % of follow-up surveys sent)
Rural Town	1500	89 (5.9%)	77 (5.1%)	69 (4.6% / 90%)
Accessible Town	1500	93 (6.2%)	82 (5.5%)	79 (5.3% / 96%)
Island	1332	231 (17%)	200 (15%)	183 (14% / 92%)

* This number is lower than the number of baseline survey responses because some baseline survey respondents did not provide contact details for us to send a second survey.

In all three cases, the demographics were cross-checked for representativeness against available census data, and there were no concerning deviations.

K.8.2 Measuring pro-environmental behaviour

The survey asked respondents how often they undertook a range of 33 different behaviours. These behaviours were drawn from an existing pro-environmental behaviour survey[147] and then cross-referenced against the Scottish Government's list of 10 key behaviours in relation to climate change.[148] Survey respondents were asked to indicate how often they did each one of the behaviours, with 21 items scored on a five-point scale (1 = never, 5 = always), and 12 scored on a binary (1 = no, 2 = yes) scale (see Table 16). In both formats, participants were also given the option of ticking a 'not applicable' box.

Table 16: Survey questions regarding everyday behaviour

Questions on a five-point scale (questions marked with an * were reverse scored)	Questions with a binary response
I ride a bicycle to work or school	I reuse my shopping bags
I walk to work or school	I am a member of a car club
I drive to work or school	I have installed equipment in my home to generate renewable electricity
I donate electrical goods to be reused	I have done everything I can to make my house energy efficient
I repair things rather than throw them away	My daily showers last three minutes or less
When driving, if I am at a red light, I keep the engine running*	I refrain from owning a car
I drive in such a way as to keep my fuel consumption as low as possible	I am a vegetarian
In the winter, I air rooms while keeping on the heat and leaving the windows open simultaneously*	I own an energy efficient refrigerator (efficiency class A+ or better)
I buy local food	I own an energy efficient dishwasher (efficiency class A+ or better)
I wash my clothes at low temperatures	I am a member of an environmental organisation
I waste food that I have purchased*	I have invested in improving the heat insulation of my flat or house
I recycle used paper	I monitor my energy use
I recycle empty glass bottles and jars	
I avoid eating meat	
I recycle empty plastic bottles and jars	
I refrain from flying	
I try to find another use for things that I no longer use rather than throw them away	

[147] Developed by Kaiser, F. G., Oerke, B., & Bogner, F. X. (2007). Behavior-based environmental attitude: Development of an instrument for adolescents. *Journal of Environmental Psychology, 27*(3), 242-251. See below under "Data processing" for further commentary on this paper.

[148] Available from (accessed October 2020): https://www.gov.scot/publications/low-carbon-scotland-behaviours-framework/pages/2/.

Questions on a five-point scale (questions marked with an * were reverse scored)	Questions with a binary response
I turn the lights off when I leave the room I car share when commuting to work or school I talk with friends about environmental issues I purchase clothes in second-hand shops	

K.8.3 Data processing

The data from these 33 questions were processed prior to data analysis in order to construct an 'index of pro-environmental behaviour' that allowed meaningful comparisons to be made between different samples. As noted in Melo,[149] latent variable models[150] are a class of models which are, in essence, multivariate regression models linking continuous or categorical responses to unobserved (or latent) explanatory variables. Item Response Theory (IRT) models[151] are a sub-class of latent variable models where the response variables are generally categorical only, and which have been used commonly in educational testing[152] where the aim is to rate an individual's overall academic ability (itself a latent variable) from a suite of test scores. Refining the class still further, the Graded Response Model (GRM;[153]) is a type of IRT model where the response variables are ordinal, i.e. ordered categorical. The Partial Credit Model (PCM);[154] is another IRT model suitable for ordinal measurements; however, as we have ordinal scales with differing numbers of classes and do not wish to assume that differences between response categories are identical for different behaviours, the GRM is the most appropriate for our analysis .[155]

The first attempt at running the GRM on the combined baseline data (i.e. the data from the 5-point scale responses and the binary scales together) was unable to converge on a solution, partly due to the presence of missing data. Further data explorations revealed that this was partly due to the treatment of 'not applicable' responses as being equivalent to data that was "missing at random" (MAR) data. As these 'not applicable' data are not really missing at random (there is information contained within it that would not be there if it were MAR), we created several derived data sets to explore the effect of different

[149] Melo, P., Ge., J.. Craig, T., Brewer, M.J. & Throniker, I. 2018. Does work-life balance affect pro-envirionmental behaviour? Evidence for the UK using longitudinal microdata. *Ecological Economics*, 145, 170-181.

[150] Galbraith, J.I., Moustaki, I., Bartholomew, D.J. & Steele, F. 2008. *The Analysis and Interpretation of Multivariate Data for Social Scientists*. London, Chapman & Hall.

[151] Baker, F. & Kim, S.H., 2004. Item Response Theory, New York, Marcel Dekker.

[152] Lord, F.M. 1980. *Applications of item response theory to practical testing problems*, Hillside, NJ, Earlbaum Associates.

[153] Samejima, F. 1968. Estimate of latent ability using a response patern of graded scores. *ETS Research Bulletin Series*, 1968, i-169.

[154] Masters, G.N. 1982. A Rasch model for partial credit scoring. *Psychometrica*, 47, 149-174.

[155] Rizopoulos, D. 2006. Itm. An R Package for Latent Variable Modeling and Item Response Theory Analysis. *Journal of Statistical Software*, 17, 1-25.

missing data treatments on the GRM. In the case of the imputed data set, we recoded 'not applicable' as 'never' for the 5-point responses, and as 'no' for the binary responses. This treatment succeeded in creating a data set in which the GRM was able to converge on a solution. Several checks were run to assess the validity of this data treatment (separately creating GRM models on the raw 5-point and 2-point data and re-checking the resulting item difficulties - which were not changed).

The outcome of the GRM creates an ordering of items in terms of (what can reasonably be interpreted as) behavioural difficulty, with items like "*I reuse shopping bags*" and "*I recycle empty glass bottles and jars*" at the easy end of the spectrum, and items like "*I am a member of a Car Club*", "*I am a vegetarian*", and "*I car share when commuting to work or school*" at the difficult end. These difficulty estimates are then used as weightings in the calculation of each individual's final score on the latent variable which we are referring to as an index of pro-environmental behaviour. In essence, behaviours which are empirically determined to be 'easy' are given lower weightings than those which are empirically determined to be 'difficult'. Therefore, only reusing shopping bags and recycling paper will be given less credit than (for example) car-sharing or walking to work in the calculation. Previous research has used similar calculation methods, and has referred to the outcome variable as "behaviour based environmental attitude".[156]

The final ordering of items from easiest to most difficult for the 2017 survey was very similar to the ordering in 2018 (See Appendix E Assessment of community-scale impact). The exact difficulty scores for some of the items had changed - but no individual item had shifted significantly in the overall ordering. The similarity in the overall ordering of (statistically inferred) difficulty from 2017 to 2018 is good evidence of the robustness of the method. Unless some very radical changes occur in the external environment, one would not expect the order of inferred difficulty scores for each behaviour to substantially change. That said, when interventions are designed to make changes at the population level, this either implies that the behaviour should become easier in some way for people to do (for example, a change in cycle commuting might occur when bike lanes are installed in a town or city), or alternatively that there has been a change in the level which people are willing to endure perceived difficulty in order to make their behaviours consistent with their environmental attitude.

K.8.4 Distribution of engagement in pro-environmental behaviour

As can be seen from Figures 14 and 15 there was a large amount of variation in terms of the extent of engagement in pro-environmental behaviour in the three communities studied. Whilst we can see evidence that some people's scores indicate that their behaviour is already very pro-environmental, we can also observe large numbers of responses indicating that many people behave less pro-environmentally on average. Unsurprisingly, scores tend to be clustered around the middle of the distribution.

[156] Kaiser, F. G., Oerke, B., & Bogner, F. X. (2007). Behavior-based environmental attitude: Development of an instrument for adolescents. *Journal of Environmental Psychology,* 27(3), 242-251.

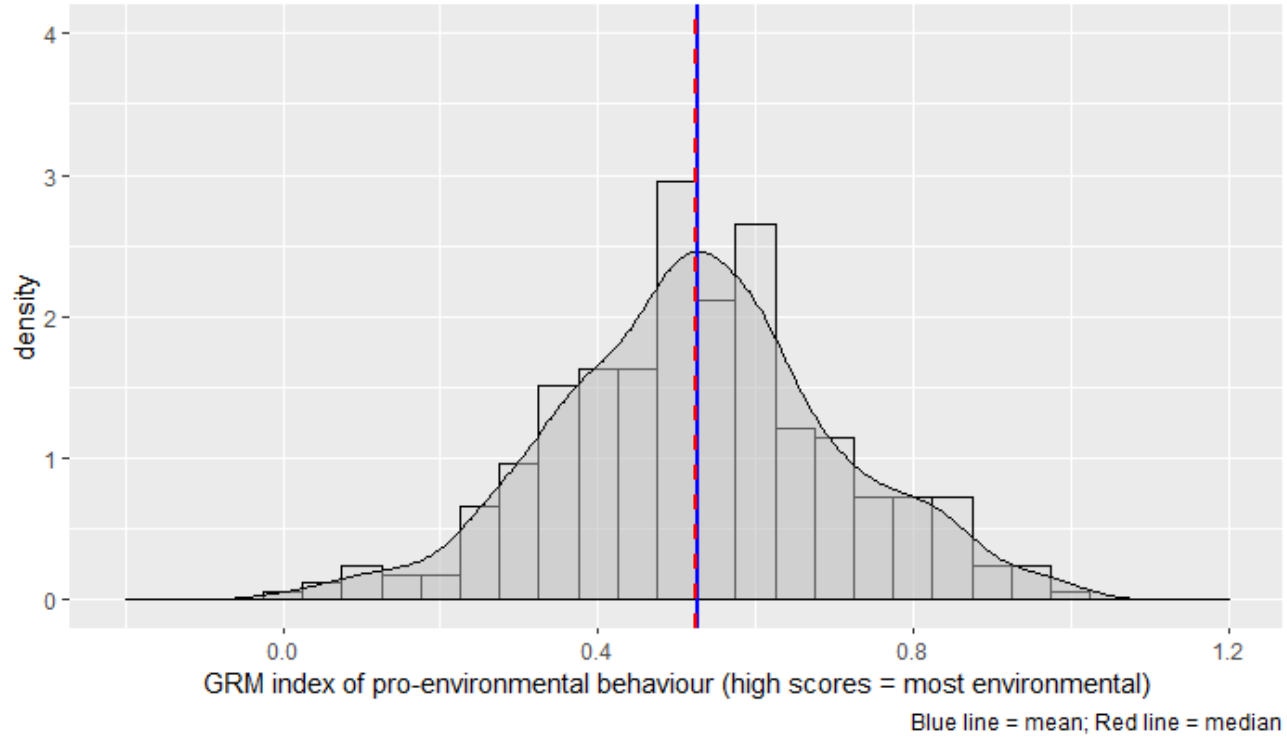

Figure 14: Distribution of pro-environmental behaviour in all samples in the research study (2017)

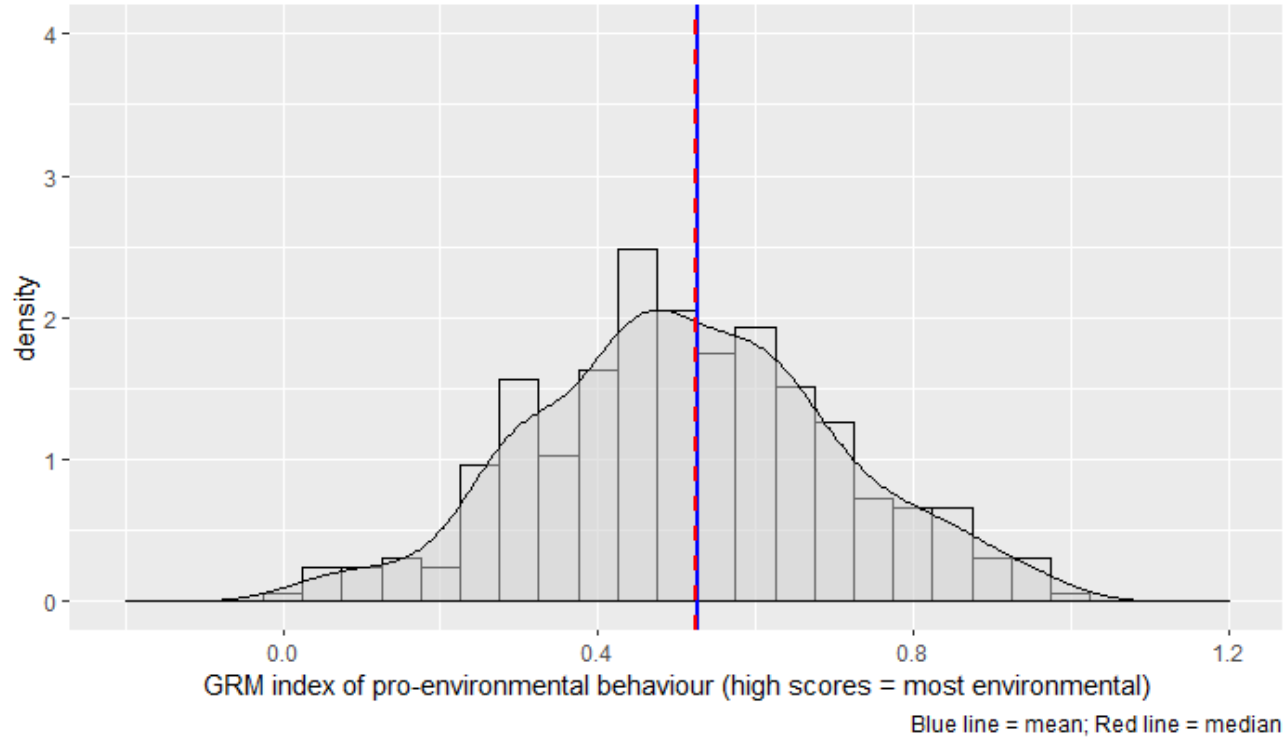

Figure 15: Distribution of pro-environmental behaviour in all samples in the research study (2018)

When we examine the correlation between 2017 and 2018 for the three different communities studied, we observe a similar pattern for each, with a notable (expected) correlation between the two years (Figure 16. In general, those people who scored highly in 2017 remained so in 2018, and the same is true at the lower end of the scale.

Whilst there is a small visual indication of there being a greater level of improvement at the lower end of the scale (as indicated by a forward tilting of the ellipse), it is clear that there are similar numbers of people reducing their score as are improving. Therefore, the most accurate assessment of change over time would be to say that we do not observe any significant community-level change over the one-year period studied in any of the three communities studied.

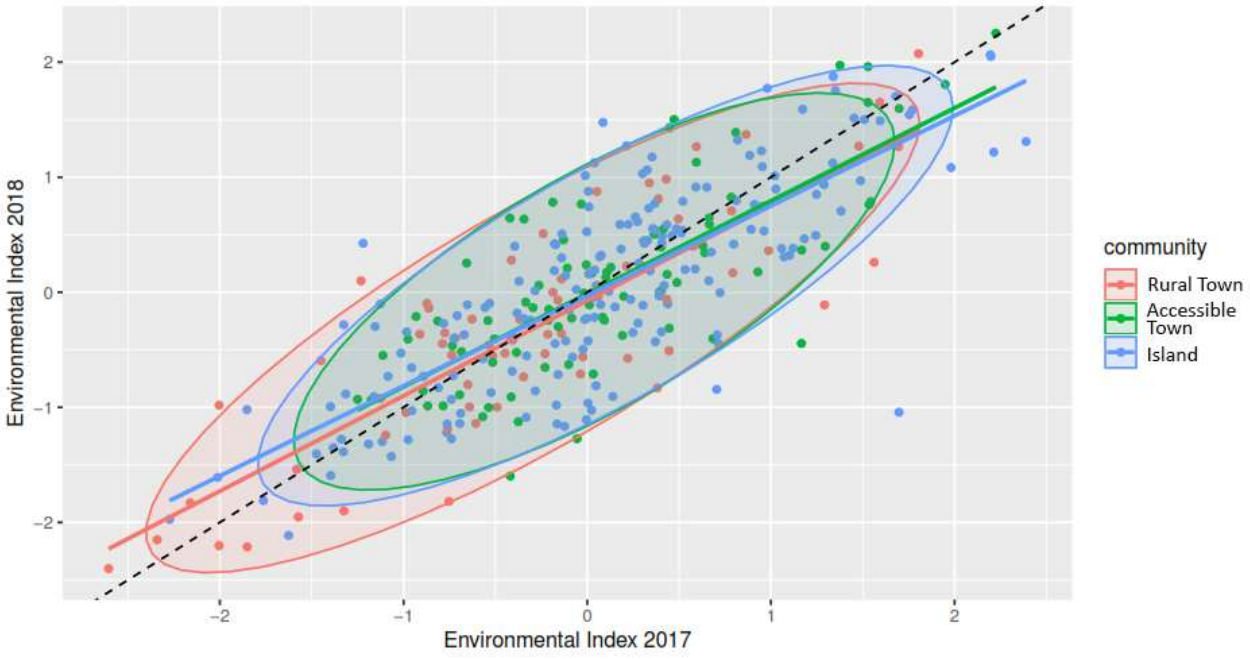

Figure 16: Correlation between 2017 and 2018 GRM Environmental Index

K.8.5 Attitudes related to climate change

In this section of the survey, participant were asked to indicate their agreement or disagreement with the following six statements:

- Too much fuss is made about climate change
- I do not believe climate change is a real problem
- I am uncertain about whether climate change is really happening
- Climate change is caused by humans
- I consider myself to be well-informed about climate change
- Human lifestyles are a major contributor to climate change

Responses were on a 5-point scale from “Strongly Disagree” to “Strongly Agree”. These items were then combined into a single scale (after reversing the direction of negatively worded items), which had a Cronbach alpha of 0.85 (in 2017) and 0.82 (in 2018). This suggests that the scales are internally consistent and reliable. The distribution of responses is presented in Appendix E (Assessment of community-scale impact).

Following this, we plotted the relationship between the climate-friendly attitudes scale and the previous pro-environmental behaviour index and found there to be a positive relationship between the two variables. The relationship between climate change

attitudes and the GRM index of pro-environmental behaviour was positive in both 2017 and 2018, as can be seen in Figures 17 and 18.

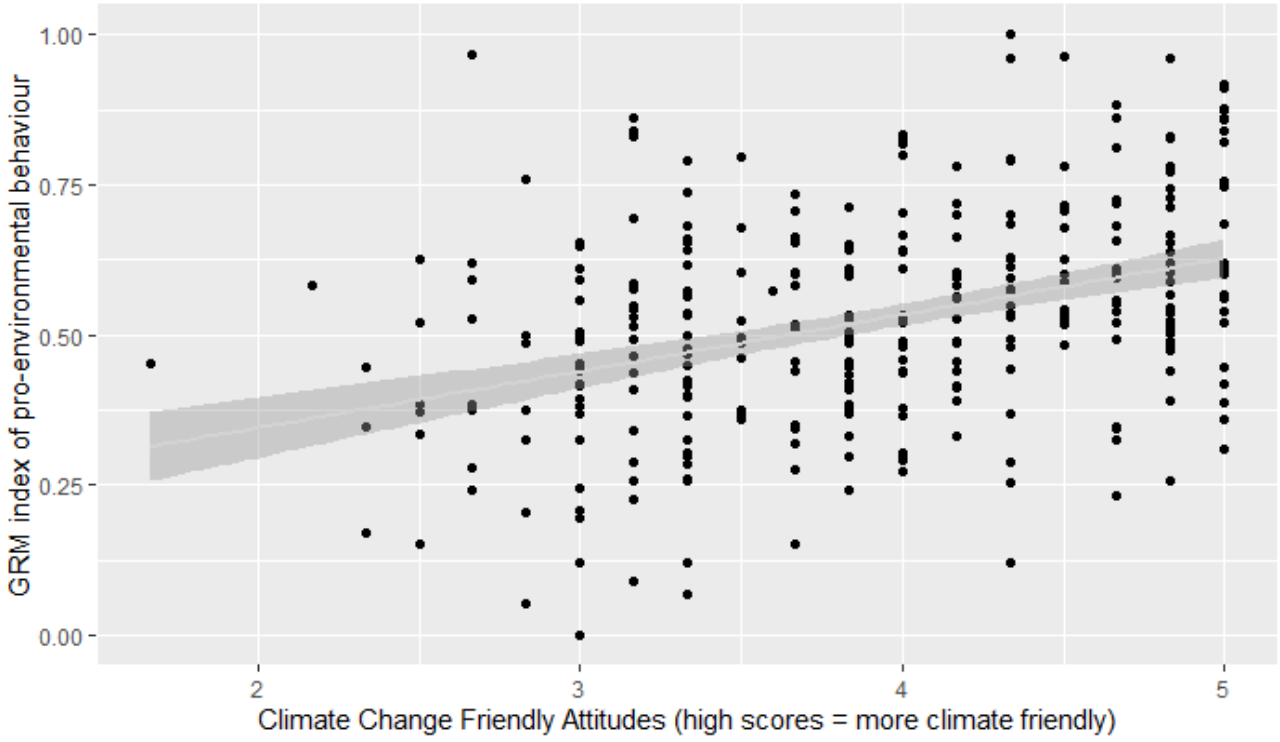

Figure 17: Relationship between attitudes and pro-environmental behaviour (2017)

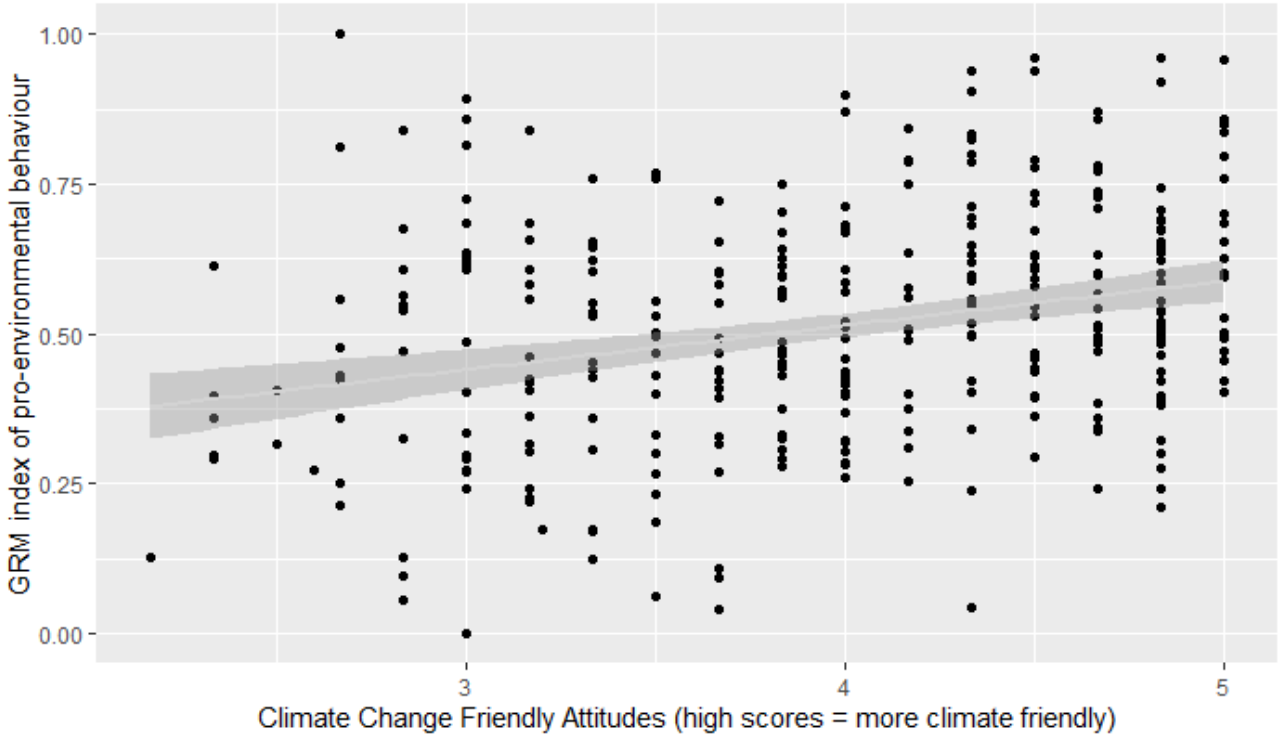

Figure 18: Relationship between attitudes and pro-environmental behaviour (2018)

K.8.6 Emotions about climate change - word cloud method

A key output from the surveys was a word cloud based on responses to an open-ended question in the first and second surveys, which asked participants to "Please describe your personal feelings about climate change (using up to 5 single words or short phrases to describe your emotions or feelings)". This was presented to project teams in the second workshop and is shown in Appendix E (Assessment of community-scale impact) of this document.

To generate the word cloud, we extracted the words from each survey (also separating the phrases into individual words) and checked their frequencies in Excel. Words of fewer than three letters (such as "a", "an", "of") were removed at this stage since they were very common and of limited significance. We also removed the words "climate" and "change" – they were mentioned frequently but did not provide insight into participants' feelings since they were the subject of the question. Three-letter words were kept, since they included meaningful words such as "sad", "sea" and "bad".

The resulting lists of words and their frequencies showed strong overlap between surveys 1 and 2. Based on this similarity, we decided to combine the lists for the purposes of the word cloud, to provide a general overview of participants' feelings. Combining the words and re-examining their frequencies identified 100 words that occurred 10 or more times, which we decided would be a suitable number to include in the word cloud (less frequently occurring words were also meaningful, but limiting the number of words would ensure that the word cloud is readable). The frequencies of the top 100 words are provided in Table 17.

Table 17: The most frequently occurring words of 3+ letters and their frequencies

future	99	children	22	real	15	concerning	11
concerned	86	countries	22	animals	14	dangerous	11
worried	85	global	22	politicians	14	despair	11
sad	58	helpless	22	Trump	14	Earth	11
worrying	53	lack	22	confused	13	frightening	11
people	49	worry	22	control	13	impact	11
angry	41	help	21	environment	13	issue	11
happening	40	political	21	fear	13	uncertain	11
world	38	concern	20	government	13	always	10
frustrated	37	hopeful	20	know	13	annoyed	10
generations	37	many	20	late	13	bad	10
much	34	natural	20	life	13	believe	10
need	34	grandchildren	19	made	13	bit	10
problem	34	humans	19	make	13	caused	10
enough	30	inevitable	18	sure	13	cyclical	10
feel	30	think	18	unsure	13	energy	10
human	28	wildlife	18	use	13	get*	10
planet	28	action	17	anger	12	getting*	10
done	27	governments	17	frustration	12	nature	10
important	25	guilty	17	man	12	pollution	10
must	25	sea	17	plastic	12	reduce	10
needs	25	anxious	16	power	12	resources	10
changing	24	try	16	see	12	term	10
scary	23	greed	15	selfish	12	time	10
weather	23	now	15	things	12	upset	10

* Added to stop words and removed from word cloud

To create the word cloud, we imported the extracted and combined words to NVivo 12 Plus and used the software's word cloud visualisation function, asking it to display the 100 most frequent words with a minimum length of three (3) letters. We did not use the options to group stemmed words or synonyms but rather used the words as they were

written by participants, made consistently lower case. Note that NVivo excludes a set of commonly used “stop words” from its word clouds (Table 18). To this, we added the words “get” and “getting” from our own list, since these were not meaningful in the context of the survey question.

Table 18: Stop words of 3+ letters excluded from the word cloud

NVivo stop words (3+ letters)	about, above, after, again, against, all, and, any, are, aren’t, aren't, because, been, before, being, below, between, both, but, can, can’t, cannot, can't, could, couldn’t, couldn't, did, didn’t, didn't, does, doesn’t, doesn't, doing, don’t, don't, down, during, each, few, for, from, further, had, hadn’t, hadn't, has, hasn’t, hasn't, have, haven’t, haven't, having, he’d, he’ll, he’s, he'd, he'll, her, here, here’s, here's, hers, herself, he's, him, himself, his, how, how’s, how's, i’ll, i’ve, i'll, into, isn’t, isn't, it’s, its, it's, itself, i've, let’s, let's, more, most, mustn’t, mustn't, myself, nor, not, off, once, only, other, ought, our, ours, ourselves, out, over, own, said, same, say, says, shall, shan’t, shan't, she, she’d, she’ll, she’s, she'd, she'll, she's, should, shouldn’t, shouldn't, some, such, than, that, that’s, that's, the, their, theirs, them, themselves, then, there, there’s, there's, these, they, they’d, they’ll, they’re, they’ve, they'd, they'll, they're, they've, this, those, through, too, under, until, upon, very, was, wasn’t, wasn't, we’d, we’ll, we’re, we’ve, we'd, we'll, were, we're, weren’t, weren't, we've, what, what’s, what's, when, when’s, when's, where, where’s, where's, which, while, who, who’s, whom, who's, whose, why, why’s, why's, will, with, won’t, won't, would, wouldn’t, wouldn't, you, you’d, you’ll, you’re, you’ve, you'd, you'll, your, you're, yours, yourself, yourselves, you've
Stop words added by researchers	get, getting

K.9 Document analysis

Data were extracted from quarterly and final reports (submitted by all five case study CCF project to the CCF programme administrator) to answer the following in relation to this research:

- What were the objectives of each project?
- What did each project report as outcomes for each objective?
- How was each outcome measured?
- What did the projects identify as successes or challenges in measuring outcomes?
- Did projects recognise monitoring as a constraint?

We then classified each objective as to: (i) whether it was measuring a carbon emissions reduction or a community impact; (ii) how well the outcome matched the objective it was measuring; (iii) how much information the method collected (e.g. was it a direct measurement such as CO_2 emissions reduction or a proxy such as number of attendees); and (iv) the effort required to collect the data. We grouped similar methods across projects, and scored them for effort to collect data (1 = easy collection to 3 = high effort to collect) and usefulness of information (1 = limited use to 3 = detailed information). We also considered which element of Climate Change Engagement each method addressed.

K.10 Participant observation

The core research undertaken in the course of conducting interviews and workshops included participant observation with case study groups, and general observation in the case study communities where overnight stays occurred. Such activity included attendance at project meetings, at public engagement events, and at work groups part of the CCF project. It also included walking round the community, visiting other projects and talking to members of the community in shops, cafes and hotels. While some participant observation was opportunistic as we spent time collecting data in each of the communities, at other times it was more formal and structured, such as when we joined project activities and events as participants.

The purpose of participant observation was threefold: (i) to triangulate the information provided from other sources, e.g. progress reporting; (ii) to provide a mechanism through which CCF project team members can expand on what they are doing unhindered by the structures of other data collection methods (e.g. workshop); and (iii) for the research team to find out about the wider social, cultural and political context in which the CCF project operates. This method enabled researchers to: (i) extend engagement with the CCF project to people who might not necessarily agree to an interview and beyond the core group who organise and attend meetings; (ii) to interact with CCF projects through their own activities; and (iii) to contribute to volunteering activities where possible. Participant observation adds to the more formal data collection by helping to ground the collected data in real-world experiences, and understand how change in relation to climate change is the outcome of the interplay between multiple forces, including social, cultural and material, and not simply a matter of cause and effect.

K.11 Reflections on research methods

Five members of the research team took part in a reflective meeting to discuss each data collection method (surveys, interviews, workshops and participant observation) in turn and to reflect on how well these methods worked as part of the project as a whole. The aim was to draw out lessons from the experience of doing the research. We began with a reminder of which research questions each method was intending to answer and followed with considering what wider information each method was able to provide. We then identified how successful each method was at measuring change at the individual or community level, as well as its wider advantages. Finally, we noted any improvements to the methods, should they be carried out by researchers or the projects themselves in the future. The outcomes of this meeting were then written up and re-considered by all researchers involved in the meeting, as well as one other researcher not present at the meeting, to ensure that all methods had been accurately represented.

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