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Community Resilience to Climate Change

Fazey, Ioan; Carmen, Esther; Rao-Williams, Jennifer; Hodgson, Anthony; Fraser, Jim; Cox, Louise; Scott, Douglas; Tabor, Pip; Robeson, Derek; Searle, Beverley; Lyon, Christopher; Kenter, Jasper O.; Murray, Ben

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Main Report

Community Resilience to Climate Change

Outcomes of the

Scottish Borders Climate Resilient Communities Project

March 2017

UNIVERSITY OF DUNDEE

Scottish Borders COUNCIL

TWEED FORUM

southern uplands partnership
living land, living community

SAMS Society & the Sea

International Futures Forum

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Acronyms

SBC – Scottish Borders Council

SG – Scottish Government

SBCRC – Scottish Borders Climate Resilient Communities (Project)

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Executive Summary

Aims and Objectives: This report presents findings from an action research project conducted in the Scottish Borders between May 2015 and September 2016. The project aimed to:

1) Support a local process of community change through building partnerships, learning and capacity building; and
2) Understand the critical factors involved in facilitating the development of community resilience to climate change to draw out key levers for change nationally.

The project was a collaboration between the University of Dundee, the Scottish Borders Council, Tweed Forum, Southern Uplands Partnership, International Futures Forum and the Scottish Association of Marine Sciences. It worked with three communities that had experience of flooding in the Borders council area and involved bringing together diverse organisations and community members in workshops and other activities.

Framing and Methods: The project took a holistic approach that directly engaged participants from local communities and national and locally based government and non-government organisations in dialogue about climate change. It also sought to identify and examine the inter-relationships between different aspects of climate disadvantage affecting different people in each community, and identified and encouraged projects and activities relevant to enhancing community resilience. The project was structured around three workshops conducted in each community which brought together community members, local authorities and other local organisations to explore locally relevant climate change related issues and to develop community level collaborative responses. A final workshop involving regional and national policy experts from government and non-governmental organisations explored how national policy can better support local action to improve community resilience to climate change. Overall, the action research identified issues of climate disadvantage and resilience at household and community levels, and how resilience could be facilitated at national policy and strategic levels. These findings are based on participatory methods of data collection, and therefore represent local and/or national policy based expertise. Through learning from action, the project also identified key lessons for enhancing community resilience to climate change.

Dynamics of climate disadvantage and community resilience to climate change: Six groups within communities were identified as particularly disadvantaged by climate change: elderly people and those with existing health issues; people on low incomes; local businesses; tenants; essential infrastructure users; and families with young children. The findings, based on participatory methods, confirm wider scale analyses from previous studies. Combinations of interrelated factors gave rise to disadvantage, including climate shocks (e.g. flood damage and the costs associated with recovery) and longer-term stresses (e.g. changes in food and energy costs resulting from climate impacts and policy responses). Existing community resilience policy and practice focuses on some of these factors but does not approach the breadth of issues or in an integrated manner.

The research also identified critical dynamics underpinning disadvantage by analysing the inter-relationships of different factors. This enabled identification of key leverage points for strategic and targeted action to enahance community resilience, including a need for greater focus on:

- Integrated working to take into account the integrated nature of the challenges;
- Opening up key bottlenecks in the system, including enhancing community capacity for resilience and ability to manage household budgets;
- Working with the underlying stresses directly associated with climate change (e.g. food, energy, water prices) and the synergies of these with other stresses (e.g. chronic health issues) which together combine to reduce resilience to shorter term shocks;

- Capitalising on the opportunities provided by crises which engender community interest in helping those most vulnerable, to enhance overall community cohesion and capacity (e.g. through 'artificial crises', such as exercising, or through strategic activities when real crises occur);
- Targeting local activities that reduce carbon emissions, which is one of the most effective ways of enhancing resilience to climate change over the longer-term;
- Understanding the underlying values, rules, norms and goals driving communities and finding ways to draw out alternatives more aligned to environmentally and socially sustainable patterns of activity.

Further work in the project also sought to understand what a more integrated policy landscape, that could better support community resilience, would look like in Scotland. Drawing on the expertise from a range of national policy sectors, four key areas of work were identified:

- Addressing conflicts and gaps in spatial planning;
- Strengthening community capacity for joined up decision-making and action;
- Better coordination across levels of governance and organisations; and
- Adopting a more holistic approach to help facilitate a more integrated approach to governance and collaboration across issues and scales.

Overall, exploring community resilience through the lens of climate disadvantage shows the importance of cross-sectoral working for more integrated approaches at the community level and the need to focus on mobilising and building capacity in communities for more joined up decision-making and action, with an explicit focus on both climate adaptation and mitigation.

Lessons learned about enhancing community resilience to climate change: The action research led to: tangible outcomes (e.g. developing local resilience groups, changing the design of a local flood-scheme to meet multiple objectives); capacity building (e.g. enhancing relationships); and learning (e.g. opportunities and support for action, identify who is disadvantaged, social dimensions of climate change impacts, and principles for designing and implementing community resilience initiatives). A number of different influencing factors shaped the type and level of outcomes in each community including project design and implementation, the initial context within communities, challenges and external influences. Importantly, the different ways participants experienced the project highlighted that community resilience is a complex social process involving multiple people, interests, capacities and perspectives. Careful design and use of participation and facilitation expertise is therefore critical for successful outcomes. Overall, there were six main recommendations for successful resilience projects:

- Approaches are needed that balance structure and flexibility, include a project team with diverse expertise, and which involve effective partnership working between communities and different institutions.
- Given the limited emphasis on climate change in communities resilience initiatives need to engage explicitly with climate change, albeit in ways that ensure climate change is framed in a locally relevant way.
- Successful community resilience initiatives will be those that seek to address underlying stresses that give rise to vulnerabilities as well as focusing on more immediate shocks (e.g. flooding). This is more likely to occur if initiatives for resilience are viewed through the lens of climate disadvantage.
- Future resilience initiatives need to give considerable attention to the complex social processes involved and, while having a focus on shaping action, need to be designed to encourage learning and capacity building.

- Given that community resilience emerges from the relationships between multiple issues, scales, resources and capacities, future resilience initiatives need to ensure that they take a sufficiently wide perspective of the different elements involved to avoid missing critical opportunities or developing ineffective interventions that may reinforce existing challenges.
- Many different tensions in the project were identified that related to different challenges of project delivery. Such tensions provide a useful basis for dialogue among team members about different expectations. Further development of the tensions as a 'dilemmas' tool to help shape community resilience projects would provide useful opportunities for building on the learning from the Scottish Borders project.
- Greater attention to action in research is needed to provide meaningful insights about 'doing' resilience in practice, which in turn requires funders who are sufficiently flexible to allow projects to navigate the complexities involved.

Introduction and Aims

Background

Keeping the world within the globally agreed target of 1.5°C rise in temperature above pre-industrial levels will require significant and rapid social and technological transformations over a very short timescale (United Nations, 2015). Even if these goals are not met, then major change is still likely to occur through planned or forced re-organisation of society due to future intensified attempts to reduce carbon emissions or because of increasing climate change impacts. This raises a critical question for policy and practice: how can the resilience of communities be enhanced in fair and equitable ways in the face of increasing impacts of climate change? Given that awareness about climate change is growing, concerted action to accelerate the social and practical changes that lead to low carbon, climate resilient communities is required.

Widespread flooding in Scotland has continued to put community resilience higher up the political agenda, particularly in the context of responding to extreme weather. At the same time, community resilience is increasingly viewed as being part of a wider approach to community development, beyond emergency management and relevant to a range of environmental and social policy agendas, such as climate adaptation and mitigation, health, wellbeing and fuel poverty. Within many of these policies, broader and more holistic approaches have also been emerging, such as flood risk management, which has moved from a narrow reliance on engineered solutions to encompass the use of landscape level approaches. In addition, adaptation programmes in Scotland are now focusing on increasing capacity across different groups and scales to build resilience to direct impacts from a rapidly changing climate and to strategically avoid actions that exacerbate existing inequalities (Scottish Government, 2009). Integrated into many of these national policies is an explicit requirement to ensure communities are engaged to help shape locally relevant outcomes, for example, to ensure community benefits from private renewable energy initiatives and an emphasis in the Flood Risk Management Act (2009) on community engagement and action (Cairney, 2015). More broadly, across Scotland, reforms are also occurring in delivery of public services. Some of these reforms have led to a greater focus on community empowerment, such as through the recent Community Empowerment Act (2015), which aims to enhance links between different public bodies and communities and to give greater control to communities in shaping decisions and actions.

The financial challenges have also led to local authorities operating under conditions of austerity (Stanley, 2016). This has also resulted in significant reforms (Commission chaired by Dr Campbell Christie, 2011). Some councils have been able to adapt to some degree to austerity through efficiency measures. In many cases, however, public service delivery has undergone or is undergoing significant restructuring (Meegan et al., 2014). This has included reduced involvement in provision of services, which is redefining the relationship between citizens and local authorities, with citizens being expected to take greater responsibility (Jones et al., 2016; Overmans and Noordegraaf, 2014; Platts-Fowler and Robinson, 2016).

It is in this context that the Scottish Borders Climate Resilient Communities (SBCRC) project for the Joseph Rowntree Foundation has been conducted. The project seeks to:

- Support a local process of change to facilitate engagement between stakeholders and build capacity for action and responses at a local level.
- Understand the critical factors that can facilitate development of community resilience to climate change in different contexts in ways that build on the existing evidence base and the action oriented research process implemented during the project.

The report outlines the main findings of the Scottish Borders Climate Resilient Communities project. Its findings are relevant to local authorities, community organisations and residents involved in local responses as well as national policymakers working across a range of issues (including community resilience, community development and empowerment, climate change adaptation and mitigation, spatial planning and other policy domains).

Aims and Objectives

The SBCRC project aimed to implement action research to both support a local process of community change and understand the critical factors involved in facilitating the development of community resilience to climate change. The project was implemented between May 2015 and September 2016. It worked with three communities in the Scottish Borders Council area and involved bringing together diverse organisations and community members in workshops and other activities.

This report outlines key messages and insights emerging from the project about:

1) The framing of the project and methods used;
2) The dynamics of climate disadvantage and community resilience;
3) Lessons learned about enhancing community resilience to climate change in practice.

The report addresses each of these aspects in turn (Figure 1).

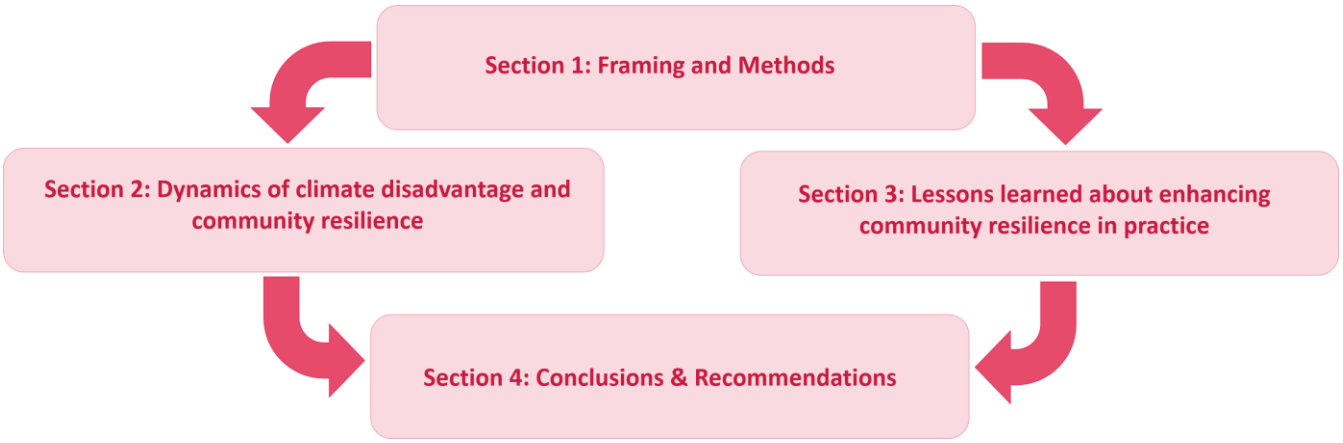


Figure 1. Structure of the report

Section 1: Framing and Methods

The SBCRC project was a collaboration between the University of Dundee, the Scottish Borders Council (SBC), Tweed Forum, Southern Uplands Partnership, the International Futures Forum and the Scottish Association of Marine Sciences.[1] It used an action research methodology to work with three communities with a history of flooding in the Scottish Borders region. It brought together members of the community and representatives from different organisations, for example, statutory agencies, local government and non-governmental organisations (see acknowledgements), to support resilience building to climate change. The process focused around a series of workshops, with activities interspersed between them.

The project was delivered between May 2015 and September 2016, with a project officer appointed to coordinate activities embedded in the SBC to support effective communication between project team members and enhance opportunities for engagement with local communities. The project depended on close working of the SBC and the project lead and project officer from University of Dundee. The partnership emerged through recognition of the work already being conducted by the SBC in local communities around emergency resilience but also with acknowledgment for innovative approaches that are also required to address the wider challenges of climate change. It primarily involved the SBC providing support to the embedded project officer on a daily basis, such as through exposure to networks and contacts, and critical locally based knowledge and with a wider oversight led by the principle investigator. Having the project officer embedded within the Council was essential for the project to work with and strengthen existing engagement with community groups and to develop locally appropriate, collaborative action.

There are four main subsections of the methodology:

1) The framing of community resilience in relation to climate change that shaped the design and focus of the project;
2) The background to the Scottish Borders and the communities;
3) The process used to implement the project;
4) The methods used to collect and analyse data.

Details of each of these are provided below. Further details (e.g. workshop design) are in working papers (Fazey et al., 2017a, b) available at: https://www.dundee.ac.uk/cechr/projects/sbcrc/

Framing community resilience to climate change

How community resilience to climate change is framed matters. Framings influence the focus of a project, its activities and trajectory. There is a vast amount of information available about resilience, communities and climate change. Many of these definitions in some way refer to the ability of a community to adapt, recover or 'bounce-back' in the context of shocks, such as extreme weather events and longer-term changes or stresses (Berkes, 2013; Twigger-Ross et al., 2015). Some definitions also highlight that resilience is a forward-looking approach involving processes of change (e.g. 'bouncing-forward'). Importantly, it is often forgotten that some of the key origins of resilience

[1]University of Dundee and Scottish Borders Council were the primary coordinators of the project. Other collaborating organisations supported the project in different ways, including contributing to design, facilitation, providing reflections of project progression, participating in workshops and assisting with engagement.

thinking come from viewing resilience as emerging from the interactions between human, social and environmental systems, where changes in one aspect have an effect on the other. Recognising the links between human actions and the environment is critical for enhancing community resilience to climate change. For example, developing community resilience to increased likelihood of floods requires measures that also aim to address the carbon emissions that cause climate change. Adaptation measures that enhance resilience therefore often require transformative responses, not just minor adjustments or even reforms. They also need to address key underlying social and economic aspects that underpin high carbon societies (O'Brien, 2012). Improving resilience of communities therefore requires joined up approaches embracing system thinking.

Given these issues, the SBCRC project sought to apply 10 key principles for approaching community resilience to climate change that guided the design and implementation of the project:

1) **Enhance adaptive capacity**: Adaptation and flexibility is a fundamental principle underpinning resilience. Many definitions of resilience relate to the ability to absorb and adapt to change without incurring major alterations in a community's function, structure or underlying dynamics. In relation to climate change, however, many adaptations can serve to prop up unsustainable activities by allowing communities to continue to operate as 'normal' but in ways that increase carbon emissions. The 'right' kinds of adaptation are therefore needed, and these often need to involve significant transformative kinds of change rather than minor adjustments.
2) **Take account of shocks and stresses:** Enhancing community resilience to climate change needs to enhance adaptability and responses to both immediate shocks (e.g. flooding and heatwaves) and stresses (e.g changes in food and energy systems more widely) over the longer-term. This includes cumulative and less direct stresses such as changes in food prices due to impacts of climate change in other countries, or higher energy costs as a result of policies aimed at reducing carbon emissions. Many shocks and stresses are likely to be unanticipated, therefore effort is needed to enhance both 'specified' resilience (i.e. resilience to something known or specific, such as flooding) and generalised resilience (i.e. for unanticipated events).
3) **Work across social and governance scales**: Community resilience is affected by what happens at individual and group levels as well as larger scale social systems and structures (e.g. national policies and wider global patterns). Work on community resilience therefore needs to take into account these aspects. This is especially important for climate change, where actions are needed at both national and local levels to achieve rapid reduction of carbon emissions.
4) **Take account of inter-related issues:** Climate change emerges from, and impacts on, a very wide range of cross-sectoral concerns, with greenhouse gases emerging from a variety of diffuse sources, from industrial practices to local travel and home heating. Systemic approaches that can help understand and make connections horizontally across a range of different sectors and issues is therefore important.
5) **Reduce carbon emissions:** One of the most effective ways of increasing resilience to climate change is to reduce carbon emissions to sustainable levels. Failure to include carbon reduction in resilience initiatives risks reinforcing unsustainable activities that contribute to the underlying drivers of climate change. Arguably, any measures to enhance community resilience that do not take into account carbon reduction may not be considered to be building resilience.
6) **Awareness of climate change:** Working with climate change requires citizens to have an interest in addressing the climate challenge in ways that enhances public support and demand for climate action. Community resilience building therefore needs to actively seek to build climate literacy and engage individuals by situating conversations in relation to locally perceived issues and dynamics. To do this, creative public participation methods are needed that can engender positive emotions (such as hope, responsibility, care, and solidarity), and inspire adaptive action and produce transformative change. Approaches that address multiple problems are also needed

to instil a sense of positivity and opportunity for tackling multiple social, economic and environmental challenges.

7) **Have a futures orientation:** While evidence from the past can help to inform change, it may limit what is perceived to be possible or constrain imagination and creativity. Enhancing community resilience, in contrast, involves shaping potential futures. It is therefore important to engage with conscious 'future-oriented' activities of those involved, including through their networks, behaviours, imagined futures, perceived options, decisions and collective actions. Consequently new ways of thinking about the future and its relationship to the present are needed that release creativity, imagination, and encourage innovation.
8) **Work with diverse resources and capacities:** Nurturing and supporting different kinds of resources will be important to enhance community resilience. This includes more obvious elements (e.g. financial resources and physical infrastructure) but also social aspects (e.g. social capital) and less obvious aspects, such as political and cultural capital.
9) **View resilience as a process:** While the characteristics of, and resources for, resilience are important, it is also important to focus on the processes involved. This requires engaging with empowering forms of change that encourage both ownership and responsibility through carefully designed approaches.
10) **Focus on those most disadvantaged:** Not all people are affected by the impacts of climate change in the same way. A triple injustice exists where low income households are the lowest producers of greenhouse gases, are often impacted most by climate change, and are usually the least able to benefit from policy responses, such as to invest in and gain from government schemes to reduce emissions (e.g. subsidies for solar panels) (Preston et al., 2013). Focusing on those most disadvantaged by climate change is therefore central to building community resilience. This involves providing sufficient levels of support and focusing on changing power relations to enable those who are most disadvantaged by climate change to engage in and take initiatives forward.

Overall, the SBCRC project sought to find holistic ways to incorporate these elements. Importantly, climate disadvantage was an entry point for exploring how to enhance community resilience with community members and other participating organisations in the Scottish Borders. We take climate disadvantage to be the combination of the three important injustices outlined above (Preston et al., 2013). That is where some families may have: (i) greater exposure to climate impacts (e.g. in Scotland much of social housing has been built on cheap land in the floodplain); (ii) are often the least able to capitalise on new opportunities (e.g. subsidies for renewable energy that require some initial capital expenditure); and (iii) contribute least to the climate problem (e.g. they generally consume and travel less). This framing of climate disadvantage helped the project maintain a focus on those who are most likely to be impacted by climate change and on understanding the interrelationships of the diverse dimensions affecting community resilience.

Background to the Scottish Borders

The SBCRC project worked with three communities (Peebles, Hawick and Newcastleton) and brought together members of the community (both residents and community groups) and representatives from different government and non-government organisations (see acknowledgments). The Scottish Borders region is a largely rural area located in the south-east of Scotland. It lies between three major cities: Edinburgh to the north (Scotland); Newcastle to the south (England); and Carlisle to the south-west (England). The area includes a network of small market towns, the largest of which has a population of c. 15,000 people. Transecting the region is the River Tweed. Many of the towns in the Borders are developed along these waterways, which historically provided an important source of energy to power a once thriving textile industry. The area is still well known for textiles, but the industry has significantly declined due to wider global economic changes. The region is undergoing

changing demographics, with an ageing demographic profile, partly because of loss of young people who leave to seek employment. The area is also known for rural recreation, such as game fishing and mountain biking. In the hinterlands surrounding the towns and villages, large-scale farming and commercial forestry are also important parts of the local economy. As a direct result of financial deficit reduction, the Scottish Borders Council (SBC) (which is one of the largest employers in the area) has experienced job losses and organisational restructuring. From 2010 to 2015 the council reported savings of £17.8 million but also predicts that the costs of maintaining the current level of service provision over the next few years will also increase considerably (Scottish Borders Council, revised 2015).

There has been a long-term focus on partnership working between public bodies in the Scottish Borders. This has included partnership working between emergency services and the SBC to improve coordination for disaster response. More widely, community planning partnerships have been established to better coordinate collaboration to deliver improvements in communities, as set out under the Local Government in Scotland Act 2003 (Audit Scotland, 2013). This partnership involves numerous public bodies and is framed around key themes including: economic growth, maximising impact from the low carbon agenda and reducing inequalities (Scottish Borders Council, revised 2015).

SBC has also made significant attempts to develop community resilience groups to support its emergency planning efforts. Through continued extensive engagement with communities, a number of local resilience groups have been established, with a particular focus on dealing with the direct impacts from extreme weather on communities, particularly flooding (Lyon, 2015). Furthermore, the Local Flood Management Plans that are being developed as a response to the Scottish Flood Risk Management Act (2009), identify community resilience groups as a key entry point for wider community engagement and action to achieve benefits beyond just enhancing responses to crises. This focus on closer working with communities extends into a 'localities approach' being developed by the Council which places a greater emphasis on engaging communities and bringing them into local decision-making processes to improve the planning and delivery of local facilities and services. This is partly in response to the Community Empowerment Act (2015) and is framed around key issues identified in the SBC Reducing Inequalities Strategy, for example health, education, housing and safety.

In the Scottish Index of Multiple Deprivation, the Scottish Borders is divided into 143 areas (data zones), with five of these within the 15% most deprived areas across Scotland. Kazmierczak et al. (2015) examined the levels of flood disadvantage across the Scottish Borders and identified eight areas with extremely high or acute disadvantage to flooding. This includes some of the larger towns, such as Peebles, large parts of other towns, such as Galashiels, Selkirk and Hawick, and small rural villages, such as Newcastleton. It also includes large rural areas, such as the hinterland around Peebles (Kazmierczak et al., 2015).

It is in this context that the dynamics of climate disadvantage and resilience are explored in the SBCRC project. Three communities were chosen on the basis that they all had a history of flooding but also provided distinctly different other challenges (commuter town, urban regeneration, rural development). These included Peebles, Hawick, and Newcastleton. The background to the three communities is as follows.

Peebles: Climate change, commuter town and flood resilience

Peebles is an historic market town in the west of the Scottish Borders Council area, with a population of around 8,000. Running through the centre of the town is the River Tweed and the confluence with the Eddleston Water, locally known as 'the Cuddy'. Some areas of the town located close to these watercourses have a history of flooding. With its close proximity to Edinburgh and good transport

infrastructure, many residents travel to Edinburgh for work and educational qualifications are generally high. However, there is also a relatively high number of elderly people living in Peebles with many young adults moving away to access a wider range of work opportunities. There are a number of community groups in Peebles, such as those focusing on local food, youth development and a Community Resilience Group working to enhance resilience to flooding in the Tweed Green area.

Hawick: Climate change, flooding and urban regeneration

Hawick is an industrial town centrally located in the Scottish Borders region. It is one of the largest towns in the Scottish Borders, with a population of around 15,000. The town grew around an internationally renowned textile industry powered by the waterways running through the town. As this industry thrived, the town grew rapidly in the late nineteenth century. This included the development of mills and other industrial buildings to harness power from water. Industrial decline has led to job losses and a reduced population, especially younger, more economically active people. Many of the industrial buildings remain and there is a history of flooding across large parts of the town. There is an active, self-initiated local flood action group and a more recent Community Resilience Group established through the Hawick Community Council and the SBC.

Newcastleton: Community resilience, climate change and rural development

The remote, rural community of Newcastleton is in the far south west of the Scottish Borders region. It was a planned settlement, built on the flood plain by the Duke of Buccleuch in 1793, and has a population of around 800 people. The main sources of employment are forestry, agriculture, and tourism. Hawick and Carlisle are both 22 miles away on roads that are often single track. Over the last few decades, the village has lost a number of key services, such as the village petrol station and the railway line connecting the village to Edinburgh and Carlisle, which closed in 1969. There is a relatively high number of elderly people in the community and young people often move away for employment. The community council is a central group in the community. The community development trust is also important and who work with local NGOs on diverse issues, but with a particular focus on strengthening physical connectivity, such as improving IT and transport infrastructure. The community is well organized, and despite not having a formalised resilience group, it provides support in emergency situations.

Process for implementing the project

The project used an action research methodology, which involved primarily focusing on bringing community and local organisations together (including the Borders council and other relevant organisations – see acknowledgements) to provide opportunities for enhancing partnerships, exploring challenges and improving understanding of community resilience in the context of climate change and to seek solutions to complex and integrated issues. The primary assumption underlying this action was that resilience building is predominantly a social process, involving relationship building, collaboration and trust, in this case between community residents and representatives of different institutions from across different public, private and local authority domains.

The process was structured around nine workshops interspersed with other activities (Figure 2). Three workshops were conducted in each of the three communities. A tenth workshop then drew on the outcomes of the work in communities to examine issues relating to national level policy.

The community workshops brought together local people, SBC staff and other relevant organisations to explore locally relevant issues relating to climate disadvantage and to identify collaborative actions to take forward to improve community resilience. All workshops were conducted during the evening to support community members' engagement and typically lasted between 2½-3½ hours. They were designed and professionally facilitated by Ioan Fazey (University of Dundee), Anthony Hodgson (International Futures Forum), and Kevin Murray (Kevin Murray Associates).

The community workshops were tailored to particular needs of the different communities involved. They included:

Stage 1 Workshop: This focused on understanding who was disadvantaged and why, and developing a sense of direction for the project. The workshop took a holistic approach by examining diverse impacts of climate change including: increased exposure to natural hazards (e.g. flooding, rising food prices, increasing water scarcity, changing energy costs), and impacts from potential policies related to climate change, such as those aiming to cut carbon emissions. By examining the integrated nature of the challenges facing communities, it was possible to identify who was likely to be disadvantaged and why, as well as beginning to explore the underlying dynamics of the relationships between different issues relating to disadvantage.

Stage 2 Workshop: This focused on examining how to move towards more desired futures. It involved applying the Three Horizons futures thinking approach (Sharpe et al., 2016) in different ways to the different circumstances of the communities. This approach involves facilitated dialogue to help map out potential transitions from one pattern (e.g. less resilient community) to another (e.g. a more resilient community). The approach helps avoid the problem of visions of the future being constrained by what is available in the present and supports the identification of some of the key aspects needed for the desired future to emerge. The simple and intuitive framework of Three Horizons makes it a useful approach for working with diverse perspectives, values and mind-sets (Sharpe et al., 2016). The outcome of these workshops was a better sense of future directions for resilience that took into account the complexities of community life and the different needs and desires involved.

Stage 3 Workshop: This depended on the outcomes of the first two workshops. Essentially, however, it provided a facilitated space for engagement of community members with different organisations to focus on taking forward actions identified in earlier stages. The focus in Peebles was on developing a local flood resilience group; in Newcastleton it was on addressing four critical issues of importance to the community through engaging with diverse organisations; and in Hawick a community based event was undertaken, which showcased outcomes of different work-streams that had become involved in shaping the design of a local flood scheme.

Activities between workshops: Between the workshops, the project officer worked to enhance engagement and interaction depending on the needs of the different communities and to collect appropriate data to improve understanding about community resilience. Examples of such activities include face-to-face discussions, support for community members to undertake research in their own community and facilitating more effective communication between different groups. Other activities, such as project planning and advisory board meetings were also held during the course of the project. The SBC project team organised regular meetings to share knowledge to inform the process. Initially these discussions focused on logistics, identifying potentially useful outcomes for the council and identifying existing community engagement routes, opportunities and challenges. A four-hour workshop was also held towards the end of the project with team members to reflect on the successes, opportunities, strengths and weaknesses of the project, as well as on what had been learned through the process. This provided important insights relevant to informing future projects.

Engagement strategy: A strategy for engagement was applied that focused on using existing engagement routes of the SBC with community groups (Figure 3). The project team included SBC staff

with a remit in emergency planning, climate change and economic development, land use and ecology, flood risk management and policy. The project team also included representatives from two local NGO's: The Tweed Forum and Southern Uplands Partnership. This enabled identification of a wide range of existing groups and key stakeholders relevant to the project. In the initial set up phase, face-to-face discussions were held with diverse groups and key stakeholders to explain the project, identify relevant links, and invite them to participate. Those initially participating were then encouraged to bring in others, with the result being a snowball effect, with greater awareness about, and engagement in the project building as it progressed (Figure 3). In total, 284 different individuals participated in some way, with 219 attending workshops (166 community members and 53 organisational representatives).

As part of the continued engagement process, information was shared with participants. This included producing reports after each of the nine community based workshops. These are available at: http://www.dundee.ac.uk/cechr/projects/sbcrc/. In addition, as highlighted in previous studies (Cinderby et al., 2015), it is important to find a 'hook' around which wider conversations and activities can occur. Flooding was therefore often used to provide the focus for examining wider issues that interacted to shape climate disadvantage and community resilience.

Evaluation: A key aspect of the work was the evaluation. This was conducted by J. Rao-Williams, who provided a critical reflection on activities. The evaluation focused on interviewing participants at different stages in the project, which then provided opportunities to feedback information as the project unfolded. It also provided opportunities for summative assessments of the tangible, capacity building and learning outcomes in the project, and why they were emerging. Outcomes of the evaluation have been incorporated into the overall findings outlined in this report.

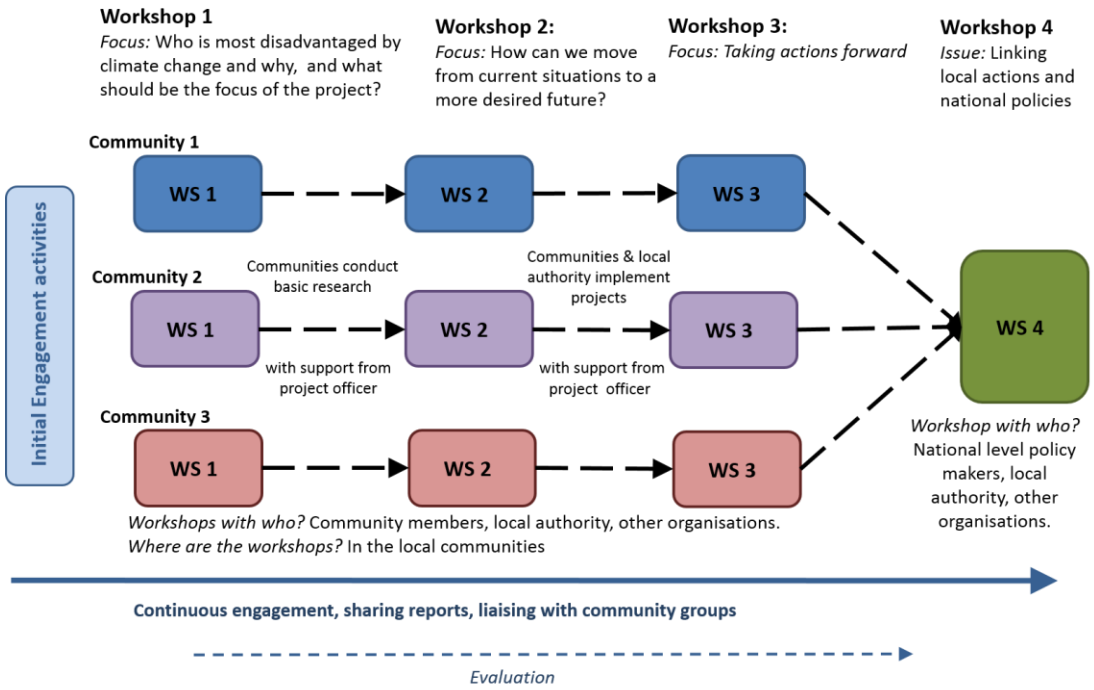


Figure 2: An overview of the project process

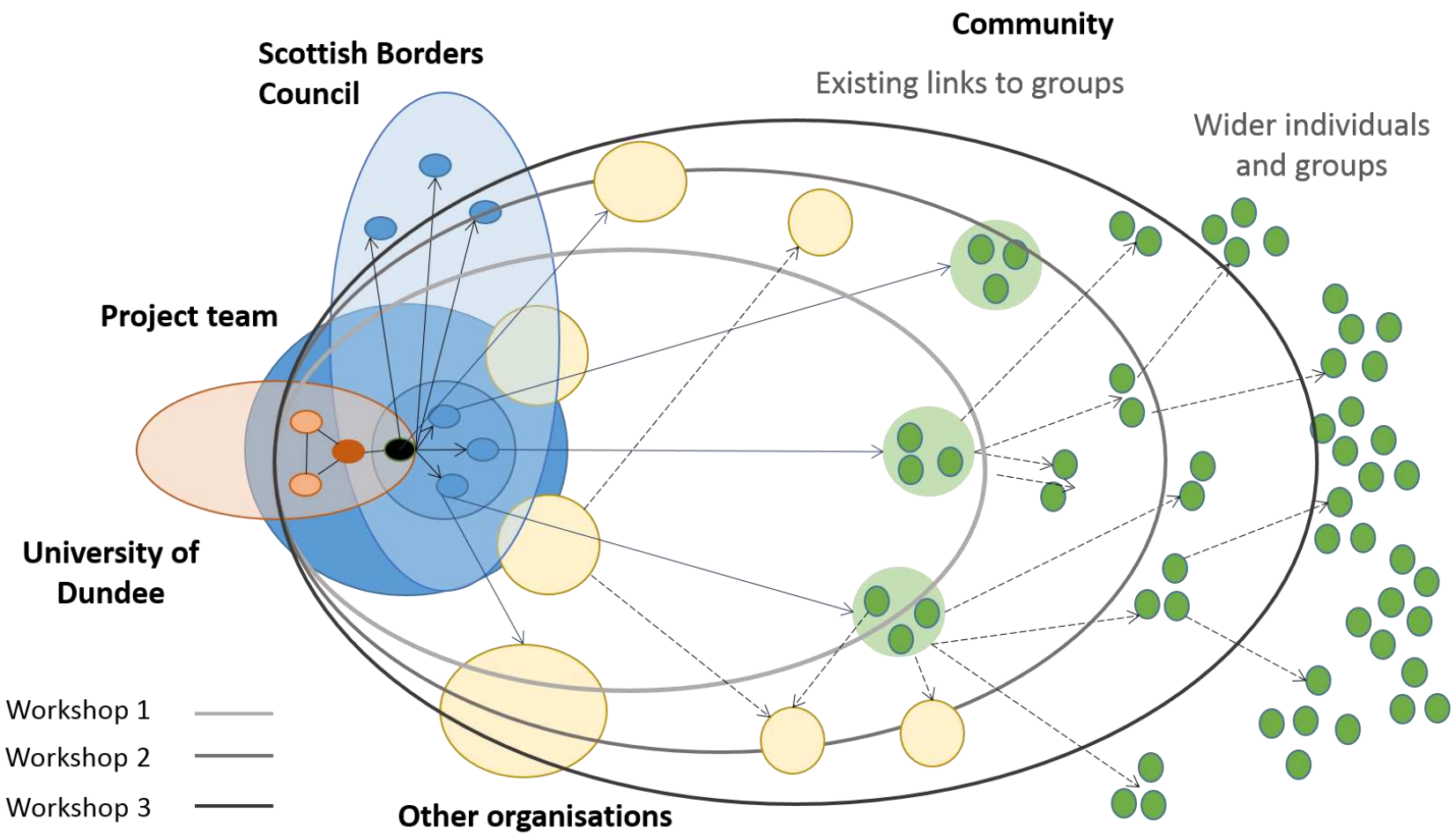


Figure 3: An overview of the engagement strategy used in the project. Initial routes were used followed by snowballing and continued engagement and bringing in new stakeholders as the project progressed.

Methods used to collect data

In addition to implementing action, the project aimed to address three primary research questions:

1) Who is disadvantaged by climate change in communites and why?
2) What are the key underlying dynamics of climate disadvantage at a community level and how does this inform understanding of community resilience?
3) How can national policy better support community resilience to address issues of climate disadvantage?

These key questions were addressed by capitalising on the opportunities that the structured action process provided to elicit knowledge and information. The approach to the research was inductive and based on a modified version of grounded theory (Strauss and Corbin, 1998) involving an iterative process of collecting and examining data, identifying patterns and insights, which then informed the next cycle of data analysis and pattern identification (Strauss and Corbin, 1998). This 'bottom-up' approach to the research facilitates emergence of new ideas in ways that are not constrained by pre-set questions and which are able to answer new questions that arise as the project unfolds.

Methods of data collection included:

- **Workshops:** These were designed to both encourage dialogue and to collect views, opinions and relevant information.
- **Ethnographic research notes:** A research diary kept by the project officer (E. Carmen) provided a written account of the process to develop a better understanding of the three communities, local policies, practices and initiatives led by the council and other organisations and the wider policy landscape. Notes were updated after significant events in the process, such as meetings, workshops or when faced with obstacles or challenges.
- **Interviews:** Semi-structured interviews were conducted by a separate project evaluator (J. Rao-Williams) over the course of the project to understand how the project was progressing, what was or was not being achieved, and to gain critical insights about the challenges and opportunities of the project. A total of 47 face-to-face or telephone interviews of 20-30 minutes were conducted with participants following the workshops. Where possible, interviews at different stages of the project were conducted with the same participants from earlier stages. A total of 27 different people were interviewed (9 project team, 9 from participating organisations, and 9 community members).

The information collected about who was considered to be disadvantaged (Question 1) was used to inform the development of understanding about the dynamics of disadvantage operating at community levels (Question 2). This was then explored in relation to the wider national policy context in the tenth workshop by examining how a more integrated and systemic approach could be established to support community resilience in relation to climate change (Question 3). This then provided insights about community resilience and disadvantage operating over different social scales (group, community, and national policy) (Figure 4).

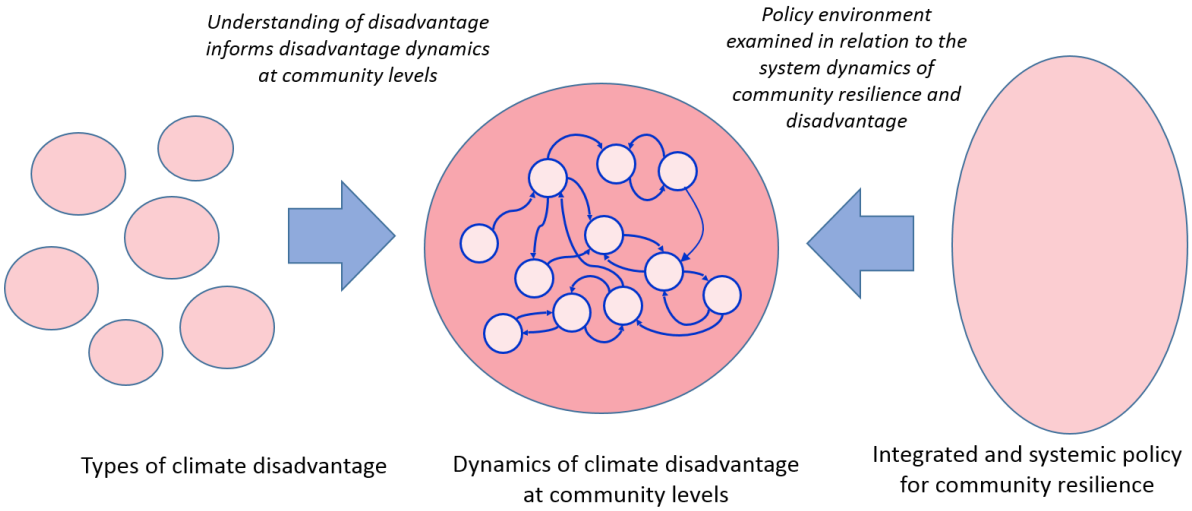


Figure 4. Inter-relationships of knowledge from different scales and how they inform understanding of the dynamics of climate disadvantage and resilience. The primary goal was to understand the dynamics of climate disadvantage (centre panel), which was informed by understanding the different groups or types of disadvantage at lower social scales (left panel) and the policy environment at wider national scales (right panel). Together, these provide insights about community resilience.

For Question 1 (who is disadvantaged), data came from the perspectives of participants in the first workshops in the three communities, the second workshops in Newcastleton and Hawick following the flooding in December 2015 to January 2016, and through the collection of insights from the project officer. The analytical process involved the grouping of segments of text about climate disadvantage and perceived causes (104 different factors were identified) into themes and sub themes. This enabled identification of key groups of climate disadvantage.

To address Question 2 (the dynamics of disadvantage to climate change), data from the workshops and ethnographic notes were examined to identify key statements about the perceived causes of disadvantage. This approach built on previous participatory methods used to identify complex system dynamics (Fazey, 2011; Fazey et al., 2006). Causal links between different statements were then identified which enabled the development of preliminary systems 'maps' for different disadvantaged groups. This enabled a higher level of understanding to emerge and key resilience dynamics to be identified, which were then further explored in the policy workshop. A more comprehensive community systems diagram was then produced based on comments from this workshop, and by triangulating this with original data from ethnographic notes and interviews. Importantly, through understanding the system's dynamics, key aspects that enhance or constrain resilience were identified.

To identify key areas for national policy to better support community resilience to climate change (Question 3) ideas were generated in the final workshop, which were then clustered using Hexagon mapping methods (see http://www.h3uni.org/). Overall, the workshop provided new insights about the integrated nature of issues relating to resilience.

Section 2: Dynamics of climate disadvantage and community resilience

This section reports on the findings about climate disadvantage (Figure 4). This includes:

1) The types of people most disadvantaged by climate change and why;
2) The dynamics of climate disadvantage occurring within communities and implications for community resilience, and
3) How wider, national policy environments can encourage community resilience.

Types of climate disadvantaged groups

Across the three communities, six key groups were identified as being particularly disadvantaged by climate change (Figure 5). These groups were:

Elderly people and those with existing health issues: Many of the factors contributing to climate disadvantage for this group related to limited physical and mental wellbeing interacting with direct and indirect impacts from climate change that can make daily life more difficult. This involved visible, immediate impacts from extreme weather but also less visible, slower changing, less direct impacts that shaped access to and needs for essential aspects of life, such as food, energy and water. This was a particularly important group identified in Peebles, which has a relatively high proportion of elderly people.

People on low incomes: This group involved people temporarily out of work, recently unemployed or the long-term unemployed struggling to find work. The factors identified for this group related to the potentially more severe and longer lasting consequences from extreme weather linked to a lack of financial resources. Furthermore, less visible, slower changing climate related impacts may also add further pressure to household budgets and reduce the capacity of this group to adequately meet basic needs, such as food, energy and maintaining a home over the longer-term. Some factors were also perceived to affect this group's capacity to engage in wider activities, such as reducing emissions or maintaining and developing livelihoods. This was a particularly important group identified by participants in workshops in Peebles relating to employment opportunities for young people and in Hawick relating to community members recently unemployed by factory closures.

Local businesses: This group involved farmers in rural areas, small and medium enterprises, social and private landlords and community social enterprises providing important facilities, e.g. sports and social facilities. Factors affecting this group included immediate shocks (e.g. bad weather, flooding), which limited the ability of businesses to trade in the short and longer-term, support local livelihoods, and continue to provide important goods, services and facilities within communities. Increasing costs were identified as a particular issue for some local businesses, particularly those with limited financial resources. This was considered to be particularly problematic for start-up businesses that already had high costs, low income and often limited local knowledge.

Tenants: This group mostly involved tenants renting privately, and some in social housing. An important factor influencing disadvantage was the lack of power/rights of tenants and availability of resources to take action to improve household level resilience to climate change, such as for improving energy efficiency or increasing protection from flooding. This was a particularly important group identified by participants from Hawick, which has a high number of small rental properties.

Essential infrastructure users: This included people reliant on mains energy sources and/or on public or private transport infrastructure. Climate change disadvantage factors related to short term losses

of services and more prolonged disruptions to the accessibility of goods, services and livelihood activities within and out with communities that are an essential part of people's daily lives. The factors related to visible challenges, for example, blocked roads and less visible challenges linked to climate change, for example increasing cost and availability of transportation. This was a particularly important group for small rural communities, such as Newcastleton, with limited community based services and public transport, and a high reliance on private transport.

Families with young children: This group involved large families and single parents with young children, particularly those with limited family support. Factors identified as important for this group included a reduction of accessibility to essential goods and services that limited ability to continue daily life, such as access to childcare and increases in cost of food and energy.

Key findings and implications

The results above on climate disadvantage point to five key, more generalisable findings. First, although many people in communities are affected by climate change, different groups are affected in different ways, with some groups being particularly disadvantaged by climate change over others. A one size fits all approach to community level action linked to climate change is therefore not likely to be effective**.** There is therefore a need to avoid viewing communities as a single homogenous group, such as when supporting vulnerable groups during emergencies.

A second key finding is that some people or households may be characterised as belonging to more than one disadvantaged group (e.g. families with young children may also be on low incomes). While this finding is not new, it is of critical importance as it highlights that some community members will be highly vulnerable to climate change. Any approach to addressing climate disadvantage or enhancing resilience therefore needs to include consideration of multiple drivers of disadvantage in ways that capture diverse climate change impacts (e.g. likelihood of flood impacts as well as rises in food prices). Approaches are now emerging in Scotland at a national policy level that seek to include wider social dimensions (e.g. adaptive capacity) for assessing vulnerability in the context of flooding (Kazmierczak et al., 2015).

Third, climate change involves visible, immediate impacts for local communities, such as extreme weather (shocks) but also less visible, indirect and longer-term impacts (stresses), such as through changes in wider food and energy costs (Twigger-Ross et al., 2015). Working to enhance resilience therefore requires active steps to take account of less visible impacts that emerge over longer timeframes and which erode capacity to respond to short term shocks.

Fourth, when different factors are considered together, some families and groups appear to be being pushed towards critical thresholds over which it will not be possible to meet basic daily needs. This may occur through the general encroachment of underlying stresses, which then makes it difficult for community members to cope with shorter-term shocks. Enhancing resilience must therefore include a focus on identifying and avoiding critical thresholds.

Finally, climate change shocks and stresses were identified by many participants as having further implications, such as generating fear or stress, which then exacerbates physical or mental health issues. A focus is therefore needed on the relationships between different factors that can emerge over time, and not just on immediate impacts.

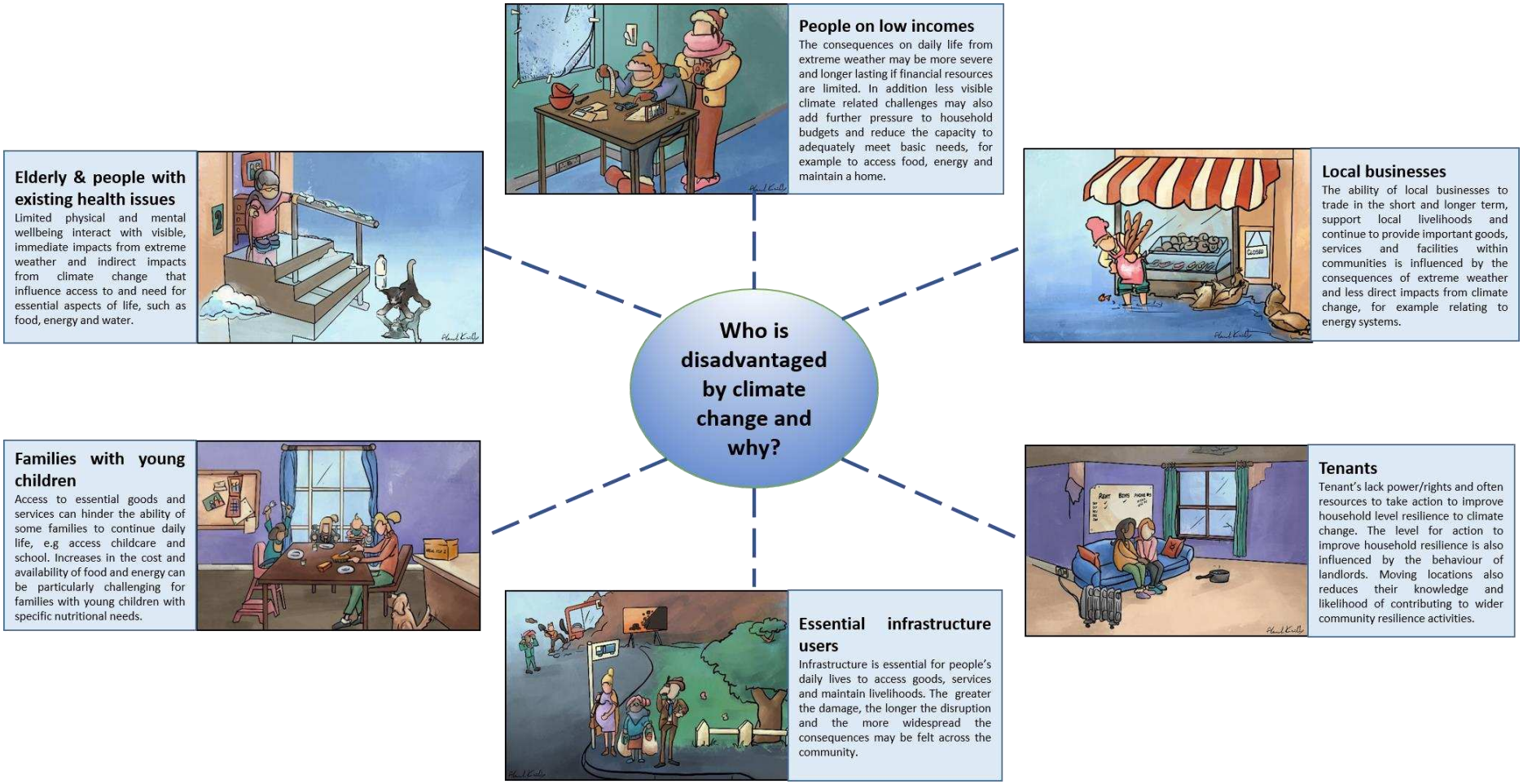


Figure 5: The six key groups identified as being disadvantaged to climate change across the three communities

Community level dynamics

Many of the specific aspects of climate disadvantage identified above through participatory research confirm wider and less fine-grained studies of climate disadvantage (Lindley and O'Neill, 2013). Importantly, however, understanding the relationship between these factors is critical as it is the dynamics of how the different factors reinforce each other that underpins vulnerability of communities to climate change (Fazey, 2011).

The data on the factors associated with climate disadvantage from workshops and interviews often explicitly identified critical connections between them, such as between stress and anxiety, physical health and mental wellbeing. To better understand these dynamics, causal links between climate disadvantage factors were identified, and then used to develop causal loop diagrams (Sterman, 2000).

These diagrams enable critical feedback mechanisms associated with climate disadvantage to be identified that show the underlying dynamics at a community level that enhance or constrain resilience.

Figure 6 provides an integrated causal loop diagram representing the 'system' of climate disadvantage. The direction of an arrow highlights that a change in one component has an influence on change in another. Positive polarity of an arrow (+) indicates that a variable will change in the same direction (increase or decrease) as the change in the previous variable. A negative polarity (-) indicates that a variable will change in the opposite direction to the change in the previous variable, for example a decrease in one will lead to an increase in the other. Reinforcing (R) and balancing (B) feedback loops show how a change in one aspect of the system influences other components. This diagram thus represents a collective, systemic community level view of climate disadvantage, which provides important insights for community resilience based on empirical data collected in the research.

In the system diagram (Figure 6), 12 important feedbacks are identified:

Sustaining daily existence (R1): This reinforcing feedback loop outlines the challenges of balancing budgets, and how this reduces resilience and exacerbates disadvantage. Rising costs of food, energy and water (in combination with other socio-economic factors) leads to the challenge of making difficult decisions, a decreasing ability of households to manage budgets, or maintain the condition of the home, which may decline if maintenance work is not undertaken. The additional costs associated with a poorer quality home can lead to more pressure on household budgets, which reinforces the challenge of managing budgets. Tenants who have less ability to control the quality of their home may be particularly susceptible. Overall, the loop highlights the daily struggles of sustaining daily existence, where climate change creates new pressures and exacerbates problems for those on low incomes in making ends meet.

Stress and health (R2) and Fear (R3): These loops highlight critical connections between stress, health and fear. In R2, limited ability to manage household budgets increases stress and anxiety, which decreases mental and/or physical health, resulting in decreases in the ability to maintain the home, which, as in R1 above, can decrease the ability to manage household budgets. This highlights that people with existing health issues may be particularly susceptible to shocks and stresses of climate change. Further, an important finding of the work was that fear about extreme events was important for some groups (e.g. the elderly), which increases stress and anxiety and contributes to further impacts on mental and/ or physical health (R3). Just as fear of crime can have negative consequences, so too can fear of climate events.

Capacity and damage (R4 & R5): These feedback loops highlight how increasing impacts of climate events increase damage to homes and businesses, which through connections described in loops R1

and R2 contribute to reductions in physical/mental health and ability to maintain homes and businesses. Ultimately this reduces community capacity to prepare for, respond to, and recover from extreme events (in combination with increasing frequency and severity of extreme weather events), which leads to greater likelihood of greater damage when extreme events do occur.

Sustaining investment (R6): Increasing damage to homes and businesses through more extreme events increases disruption to local businesses (e.g. ability to trade), decreases ability to fully recover and resume optimum trading, and reduces the amount of resources potentially available to invest in improving resilience for future events. This then increases likelihood of further damage from future events. This dynamic is particularly relevant to local businesses, including landlords, and their wider contribution to community life in shaping diverse local economies, sustaining livelihoods and community wellbeing. It is also influenced by the general willingness to invest in resilience, which may not occur if other interests (e.g. desire for monetary prosperity) supersede the investment in resilience.

Infrastructure disruption (R7): With increasing severity and frequency of extreme events, the extent of damage to community infrastructure increases, which, in turn, increases disruption to community life (e.g. access to schools and places of work). Ultimately, this decreases capacity within the community to prepare for, respond to and recover from further disruptive events.

Helping the vulnerable (R8 & R9): These loops show a possible counter-intuitive effect of increasing frequency of extreme events. Extreme events increase the extent of community engagement in actions to help others during climate shocks, influencing interest in and experience of helping vulnerable groups. This in turn increases community capacity to anticipate the needs of those likely to be vulnerable in future shocks and local capacity to take action to prepare, respond and recover (R8). Further, as capacity to anticipate the needs of vulnerable groups increases, there is greater likelihood of community members working together in the longer-term to reduce social vulnerability. This also increases community capacity in the longer-term to prepare for, respond to and recover from future events (R9).

Community cohesion (R10): As the likelihood of communities working to reduce vulnerability increases (R9), greater opportunities emerge for reducing social isolation and exclusion (e.g. elderly), which in turn can decrease fear and stress (R3). This eventually feeds back by increasing the overall capacity within communities. However, there may be an inverse relationship between time following a climate shock and likelihood of action to help the vulnerable (R8 & R9) and to increase community cohesion (R10).

Evacuation (R11): As damage to homes and businesses increase from extreme weather, the likelihood of the need for evacuation increases, which has further impacts on managing budgets and on stress and anxiety (R1, R2).

Provision of services and employment (R12): Increasing damage, which affects businesses, also affects the continued provision of employment and services within communities, which, over the longer-term, can affect the ability of some households to manage budgets and the cost of alternative options that can no longer be accessed locally.

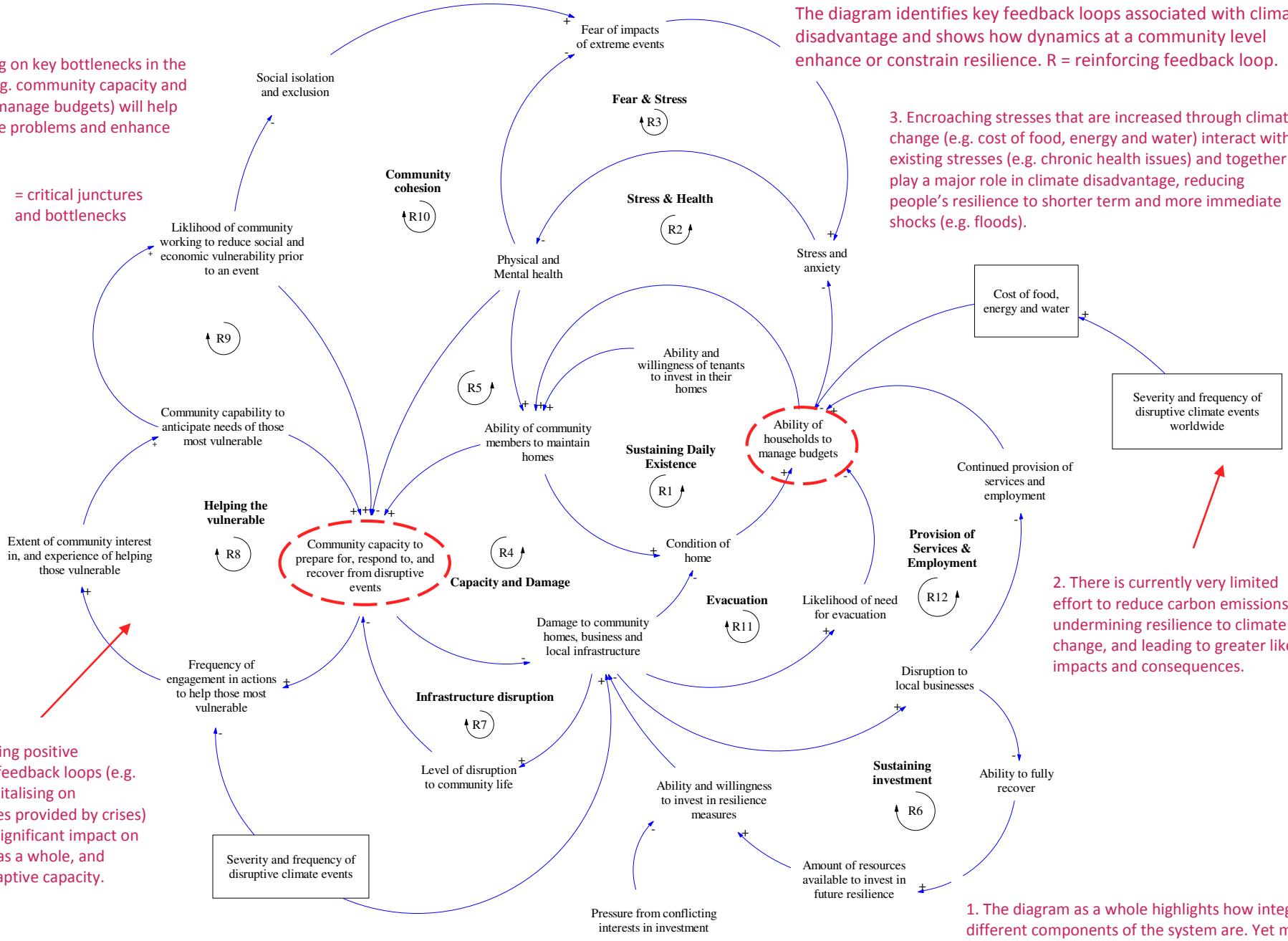
Figure 1: Systems diagram of climate disadvantage

The diagram identifies key feedback loops associated with climate disadvantage and shows how dynamics at a community level enhance or constrain resilience. R = reinforcing feedback loop.

4. Focusing on key bottlenecks in the system (e.g. community capacity and ability to manage budgets) will help to alleviate problems and enhance resilience.

= critical junctures and bottlenecks

3. Encroaching stresses that are increased through climate change (e.g. cost of food, energy and water) interact with existing stresses (e.g. chronic health issues) and together play a major role in climate disadvantage, reducing people's resilience to shorter term and more immediate shocks (e.g. floods).



2. There is currently very limited effort to reduce carbon emissions, undermining resilience to climate change, and leading to greater likely impacts and consequences.

5. Accelerating positive reinforcing feedback loops (e.g. through capitalising on opportunities provided by crises) will have a significant impact on the system as a whole, and increase adaptive capacity.

1. The diagram as a whole highlights how integrated different components of the system are. Yet many approaches to working in communities do not work in an integrated manner.

6. Focusing on key priorities, values and assumptions driving a system is a powerful way of understanding the system as a whole and assessing what actions might affect resilience. An example identified by participants was the tendency to assume that a primary goal is to enhance economic growth, at the expense of other aspects. Addressing such underlying drivers of systems is important for enhancing longer-term resilience.

Key findings and implications

The results above highlight six key findings and implications for community resilience.

1. **The system of climate disadvantage (Figure 6) explicitly shows the relationships between different parts of the system, where changes in one aspect impacts on others (e.g. between stress, health and fear and helping the vulnerable).** Yet many participants in the process highlighted that the different aspects of support are themselves not well integrated, with missed opportunities for the broader development of resilience. Working on individual or piecemeal issues alone will have limited success in enhancing overall community resilience, which highlights the need to strengthen integrated approaches to working across different sectors.

2. **A key aspect missing from the systems diagram are the linkages back to climate change.** That is, there were very few major attempts within communities to reduce carbon emissions with much of the focus being on adapting to its impacts (e.g. flooding) rather than mitigation. Reducing carbon emissions is one of the most important ways of enhancing resilience over the long-term. Integrated measures are therefore needed that both enhance adaptation and mitigation to climate change as part of all community resilience initiatives (e.g. energy efficient, flood and heat resilient homes) and for finding ways to make explicit the true costs associated with high carbon economies.

3. **The systems diagram enables critical junctures to be identified that are central to understanding climate disadvantage and enhancing resilience**. These include 'community capacity' and 'ability to manage household budgets', each of which are compromised as longer-term stresses of climate change become apparent. These two aspects are important because they directly link to most of the other feedback loops and are thus key 'bottlenecks' that have a big effect on community resilience. As such they are important focal points for enhancing resilience: without ability to manage household budgets members of a community cannot contribute to resilience and without wider capacity (e.g. skills, time and collective capacities), communities cannot help address many of the complex issues facing those disadvantaged by climate change. Many initiatives tend towards being a 'one size fits all' approach and focus on delivering specific outcomes, rather than directing resources towards building general community capacities for collective, joined up action across the community more broadly. A stronger focus on building community capacity and enhancing ability to manage household budgets over the long term is therefore a key aspect of shaping community resilience.

4. **The systems analysis highlights that longer-term and encroaching stresses play a significant role in shaping climate disadvantage and resilience.** This includes stresses from climate change (e.g. food, energy, water prices) as well as underlying stresses (e.g. chronic health problems). These affect members of a community in less visible ways (e.g. through fear and stress) and have a significant impact on resilience to shorter term more visible impacts (e.g. flooding). Many of the less visible factors are likely to be under-represented in the systems diagram compared to more immediate and visible aspects with which participants are more familiar. Focusing on addressing these longer-term underlying stresses will therefore be critical for enhancing community resilience.

5. **The systems analysis enables identification of key feedbacks that can be used to drive community resilience.** The two loops of R8 and R9 provide such opportunities. R8 highlights a counter intuitive aspect, where increasing frequency of extreme events acts as a catalyst for mobilising community support for resilience. By enhancing the 'experience' of extreme events artificially through exercising or by building on the opportunities provided by real events to focus attention and local support , community capacity for resilience can be mobilised and encouraged over the longer term. Responders during emergencies are usually fully engaged when crises occur, which tends to reduce opportunities that crises provide for developing longer-term community capacity. Collaborative strategies therefore need to be in place before climate shocks occur. Further, establishing a

Scottish wide response team that has a direct focus on galvanising longer-term support through crises may also have value.

6. **Finally, while changing specific variables (e.g. community capacity) is important, a powerful way of facilitating change towards greater resilience is to focus on changing the rules, values and norms underpinning the dynamics of the system.** The system of climate disadvantage is dominated by many different kinds of values, assumptions and worldviews. For example, perceptions of the rules around health and safety or certain assumptions or expectations of who is responsible or accountable for action can reduce motivation for participation of members of a community in resilience initiatives. Further, ability of tenants to invest in homes is restricted by particular regulations, while stigma about who is vulnerable and should (or should not) receive support influences the way different approaches for resilience are enacted. Willingness to invest in resilience (e.g. in businesses) was one important aspect of the climate disadvantage system, which was suggested to be influenced by diverse interests and priorities (including desire for material prosperity which reduced willingness to invest in resilience). Further, much of the economic aspects associated with communities were underpinned by an assumption that economic growth was the key goal, which is not always compatible with achieving more sustainable forms of living or with other goals, such as wellbeing. While focusing on such underlying values and goals is difficult, doing so can have profound impacts on the system's dynamics. Considerable attention to underlying values, norms, assumptions and worldviews is thus important for achieving effective long-term outcomes.

Overall, the systems approach, which emerged from the analysis of the inter-relations between the different dimensions of climate disadvantage, provided a range of important insights about the origins of resilience and where actions can be targeted that will have the greatest impact on enhancing resilience to climate change. Importantly, holistic approaches that can work with the highly interconnected issues facing communities will be needed to address the challenge of climate change.

Policy environments

Community resilience is also affected by larger scale social systems and structures, such as through the influence of national policies. To understand how national policy can better support community resilience to address issues of climate disadvantage, a national policy workshop was organised. Given that policy processes are complex and dynamic, involve a web of interrelated decisions, people and levels of governance (Keeley and Scoones, 1999) and multiple domains, a full policy analysis was beyond the scope of this project. Instead, the workshop focused on the question: What would a more integrated and synergistic national policy landscape look like for community resilience to climate change?

The workshop involved 24 participants from national level non-governmental organisations (12), Scottish Government (5), local authorities (3), research organisations (3) and community networking organisations (1). These participants together had a wide range of expertise relating to equality, poverty and disadvantage, community development, climate change (mitigation and adaptation), flooding, emergency planning, rural development and environmental management.

Discussions in the workshop explored two main questions:

1) What aspects of the current national policy landscape already relate to enhancing community resilience to climate change?
2) How can the national policy landscape in Scotland be strengthened to further help community resilience to climate change?

Findings on the dynamics of climate disadvantage from the community workshops in the Scottish Borders were used to help stimulate discussions and to ensure a systemic and integrated approach to discussions. Ideas to strengthen national policy in Scotland focused on integration and synergies between policy domains in line with the need for longer-term and holistic thinking outlined in the framing section. These ideas were then clustered and links between clusters identified using Hexagon thinking methodology (see methods).

Current policy domains for enhancing community resilience

Aspects of the current policy landscape that already contribute to community resilience to climate change in some way were identified to include six key policy domains (spatial planning, land management planning, flood risk management, emergency planning, energy policy, social care and health, and community development and empowerment). These were considered to provide useful entry points where the current policy landscape could be strengthened to better enable action to improve community resilience to climate change (Figure 7).

While there are many different and relevant policy domains, there are four pieces of legislation that are particularly relevant in setting the context for resilience to climate change in Scotland. These include the Scottish Climate Change Act (2009), Scottish Community Empowerment Act (2015), Scottish Flood Risk Management Act (2009), UK Civil Contingencies Act (2004) and Scottish Regulations (2005). Details of these are provided in Figure 8.

Aspects of national policy environments already focus on some important elements of community resilience to climate change. Understanding these focal policy points can help to identify areas to target to enhance action at community levels. Indeed, some focal policy points specifically highlight the need to involve communities to collaboratively shape outcomes.

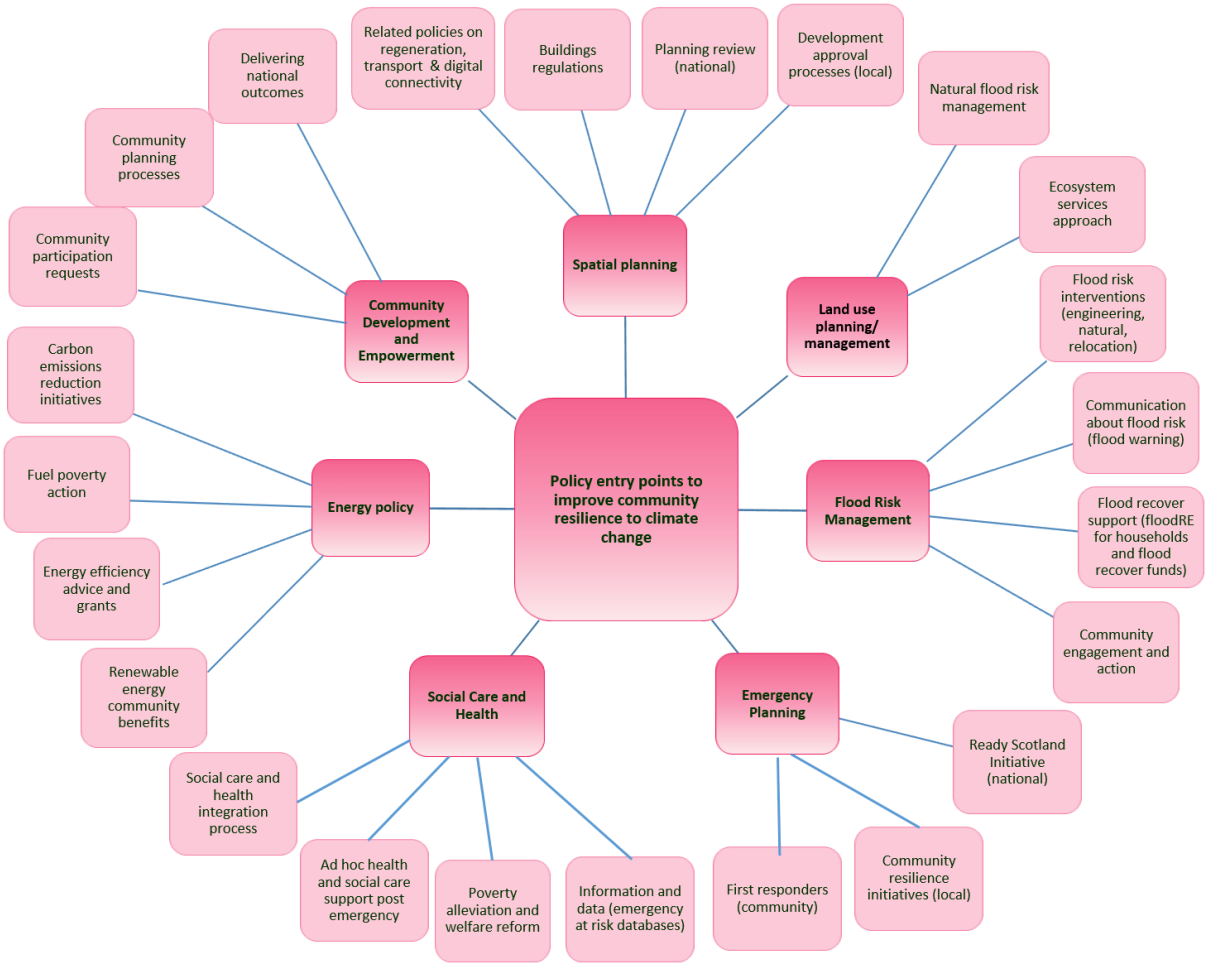


Figure 7: Policy focal points for improving community resilience to climate change

Scottish Climate Change Act (2009):
The Scottish Climate Change Act sets a legally binding framework for the reduction of greenhouse gas emissions and monitoring progress towards national level targets nationally and locally by public bodies such as local authorities. The main focus is on reducing emission. However the Act also sets out the need for action to adapt to climate change (through the Scottish Climate Change Adaptation Programme) as well as a more specific focus on the role of forestry, waste reduction and energy efficiency in climate mitigation. There is an explicit requirement to raise awareness about climate change causes and consequences across society, for example through conversations framed around climate change mitigation as well as the need to engage communities more broadly.

Scottish Community Empowerment Act (2015): The recently enacted Community Empowerment Act (2015) aims to help bring about a shift towards communities having greater influence in shaping decisions over the management and use of land, buildings and services. This is structured around strengthening community planning to give communities a greater say in how public services are planned and delivered, new rights for communities to participate in identifying needs, issues, shaping the actions of public bodies, strengthening the right to buy, and have greater control over community assets (Scottish Community Development Centre, 2015). How this will shape relationships between communities and public bodies and type of outcomes that may emerge in practice is still unclear.

Scottish Flood Risk Management Act (2009): The Scottish Flood Risk Management Act (2009) sets out a more integrated approach for the management of floods in Scotland. This includes an explicit focus on stronger partnership working between the relevant public bodies involved in the management of land and water, for example the Forestry Commission, Scottish Environment Protection Agency, Scottish Natural Heritage and Local Authorities. This broadens the scope of strategic actions from engineered flood protection schemes to also encompass natural flood risk management. There is also a strong emphasis on the need to engage community level stakeholders by taking an active and planned approach to public participation, by promoting and supporting action at the individual and community levels and improving access to information about flood risk. The Act therefore widens the scope of flood management from a narrower focus on flood defence to a much broader perspective emphasising catchment scale and public participation (Spray, 2009).

UK Civil Contingencies Act (2004) and (Scotland) Regulations (2005)
This Act sets out a framework aimed at minimising disruption in the event of an emergency. An emergency includes the impacts resulting from disruptive climate events but also other disasters, for example, events that provide a threat to national security, human welfare or from terrorism. Furthermore, the (Scotland) regulations explicitly outline particular roles and responsibilities of emergency responders. The focus is on setting out and developing scenario based plans to develop capacity to organise and effectively respond to emergencies to minimise disruption and continue the essential functions, structures and process at an organisational level and reduce any adverse impacts. Emergency plans include a focus on supporting vulnerable people. People with mobility difficulties, mental health difficulties and dependants, such as children, are key groups identified as vulnerable across a range of emergency situations.

Figure 8: Examples of some of the critical legislation that relate to different aspects of climate disadvantage

Strengthening the Scottish Policy Landscape

Workshop participants identified sixteen ideas for strengthening the national policy landscape in Scotland towards enhancing community resilience. These were grouped into four main clusters explored further below:

- Supporting community resilience to climate change through spatial planning policies;
- Strengthening community capacity;
- Improving coordination across levels and organisations; and
- Adopting a holistic approach.

Between each cluster inter-linkages were also identified (Figure 9). These links emphasise the interconnected nature of the national policy landscape and that changing one aspect of the national policy landscape can have knock on effects on other policy areas.

Cluster 1: Resilience through planning policies

This cluster focuses on improving community resilience to climate change through the planning system, which brings together a range of different policy goals. The planning system is an important mechanism for shaping action on the ground at a local level, however local spatial plans are often not delivering carbon dioxide emissions reductions or adaption actions effectively, as highlighted by a recent study of local plans in England (Town and Country Planning Association, 2016). This cluster of ideas draws attention to the need to strengthen planning policies with a more explicit focus on community resilience to climate change.

1. **Improve the balance between economic growth and climate resilience**: Economic growth may be prioritised in the planning system. Although successful local economies contribute to community economic resilience, a narrow focus on economic growth may weaken other aspects of the system, which are important for community resilience more broadly and specifically for climate change.
2. **Change the building design standards for prolonged climate**: Building design standards shape future housing stock but may currently focus on addressing immediate, more visible issues and may insufficiently build resilience to climate change longer-term.
3. **Loosen the regulation of listed buildings:** Planning policies aimed at protecting the historic environment (for example, historic conservation status in villages) may restrict action to improve resilience to climate change, for example, renewable energy technology and improving energy efficiency.

Cluster 2: Strengthening community capacity for improving community resilience to climate change

This cluster includes four ideas that focus explicitly on the need to strengthen community capacity. This includes capacity for generalised community resilience but also an emphasis on the need for an explicit focus on different types of climate change action in communities.

4. **Establish community hubs as a focal point for community action and capacity**: The focus for facilitating greater community action in Scotland is often community councils. However, there is limited focus on supporting community councils to develop their capacity to bring together different parts of the community and work collaboratively with external organisations. Other

groups within communities may have a greater capacity to connect issues and people in the community. There needs to be a focus on bringing together existing community capacity and developing social networks in communities around which more effective community action can be organised to improve community resilience to climate change.

5. **Greater emphasis on place-based decision-making (also called 'localism approaches') to enhance local action, ownership, decisions and responsibility**: Community planning partnerships have a remit to involve communities in decision-making, but in practice this involvement is limited and may not be meaningful. The Scottish Community Empowerment Act (2015) may help to improve community engagement. Decision-making locally, however, is often not well integrated. A more holistic, place-based approach to consider actions needed across a locality is important to build climate change resilience.

6. **Foster support networks for sharing and learning between different communities about actions supporting climate resilience**: Currently there is a focus on strengthening the vertical connections between communities and local organisations and statutory agencies. There is less focus on horizontal connections that link communities together to facilitate learning to enhance capacities and share knowledge, skills and expertise between communities.

7. **Strengthen community support and capacity around adaptation/ resilience using existing mechanisms:** External support, such as from the Climate Challenge Fund,[2] for action linked to community resilience to climate change is more often sought by communities for climate mitigation than for adaptation action. There is a need to increase capacity of communities to draw on external support through the Climate Challenge Fund or other sources to enhance climate change adaptation at the community level.

Cluster 3: Better coordination of data, information, knowledge and resources

The third cluster relates to the need to enhance the coordination of data, information, knowledge and other resources across levels of governance. This broad policy dimension focuses on the need to mobilise existing capacity to align better with community needs in the context of climate change. Five ideas were identified in relation to this cluster:

8. **Inform national levels about needs/actions/policies from local levels as well as vice versa:** Information tends to come from national public bodies down to communities. There is much less of a focus on feeding in knowledge from the local level to inform decisions and action nationally. This relates to a need to move from a 'top-down' approach to governance towards an approach that enables learning about local practices to more quickly inform decision-making at larger scales.

9. **Greater recognition of the need to support the increasing demands/expectations in the cascade between national and local levels with appropriate levels of resourcing:** There is often a mismatch between new responsibilities outlined in national policy and delivering action locally. For example, the implementation of the Flood Risk Management Act (2009) could do more to involve communities. There is a need to distribute limited resources more towards local level delivery to achieve outcomes that improve local community resilience to climate change.

[2] The Climate Challenge Fund is a Scottish Government grant programme that provided support, resources and training and organises events to support community groups taking action on climate change. It was introduced in 2008, and since then has awarded grants to 588 communities across Scotland totalling £75.7 million.

10. **Improve data and information sharing between partners**: Data and information on disadvantaged groups are held by some public bodies and utility companies. Despite the development of partnerships between many of these organisations, sharing of data is limited. During emergencies, some data are shared, but not in advance, and this may hamper efforts to provide support to improve the longer-term resilience of disadvantaged groups in the community and responses.

11. **Enhance logistical coordination of equipment, resources, information and activity to where it is needed most:** Equipment and support does not always match up with need in emergencies within communities. This relates to questions about developing effective focal points or hubs in communities around which community action can be organised (idea 4).

12. **Greater focus on building trust and relationships and genuine partnerships:** Although practice varies across the 32 local authority areas in Scotland, in general, there is a lack of understanding and trust between those already involved in organisational partnerships, for example, emergency planning partnerships, and those that have skills and capacity relevant to improve community resilience to climate change more widely. There is a need to improve trust and understanding between local authorities and other public bodies and the third sector to strengthen collaborative practice aimed at improving community resilience to climate change.

Cluster 4: Adopting a holistic approach to community resilience to climate change

Cluster 4 encompasses broad ideas that relate to how policy and practice for community resilience to climate change is structured, organised and delivered. A critical aspect of this is moving away from a top down, linear perspective to recognising and strengthening a wider range of relationships across the system that can maximise resources, capacities and potential outcomes.

13. **Move from a prepared response towards system preparedness through taking a more systemic rather than linear approach:** Currently a linear model is used to plan and deliver action aimed at improving community resilience in emergency situations. This dominant model delineates action and responsibilities to prepare, respond or recover. However, improving community resilience to climate change necessitates more joined up working that focuses on the connections between different groups, organisations and issues and longer-term actions, for example, changes to the location of development, assets/ management and/ or social networks.

14. **Governance that links multiple levels and actors:** Capacity across the system is currently concentrated around specific organisations and/ or specific issues. The structures in place are less focused on joining up these dispersed groups of actors. Enhancing the links between these different parts of the system would help improve collaborative working to develop practical approaches to strengthening community resilience to climate change across issues and communities.

15. **Broaden temporal and spatial scales in decision-making to improve longer-term and wider/effective outcomes for community resilience:** Across the system, decisions are not often framed around broader spatial scales and long-term timeframes. This narrow scope for decision-making limits how an issue and potential solutions are perceived and thus what type of action is undertaken on the ground. For example taking a broader approach means not only considering engineering solutions for flood defences to address more immediate challenges but also action to help build resilience more long term through natural flood risk management, changing building design and relocation of build infrastructure and/or communities away from high risk flood areas.

16. **Generalise systemic, holistic and more participatory approaches to resilience models to a wide range of challenges:** Strategic responses to disasters more generally involve successes, inefficiencies and/or unintended consequences. Learning from different types of emergencies is critical for improving community resilience but often complicated by the many sectors, organisations and scales involved. One example identified was the 2001 foot and mouth crisis. Actively identifying and incorporating learning from past crises to improve emergency response from the national to the local level can be improved by using systems models that focus attention on connections between issues to identify additional leverage points for more effective interventions that build on existing practice.

Linkages between clusters

A systems approach to community resilience to climate change not only focuses on the different components but also on the links between them. It is also therefore important to recognise the links between these four clusters, where action to strengthen one cluster can influence another part of the policy environment. Identifying and strengthening linkages can therefore help bring about more progress towards policy environments that help, rather than hinder, community resilience to climate change. Some of these synergistic links are outlined in figure 9.

Figure 9: Clusters of ideas and the links between them (L1 – L6) for a more integrated and synergistic policy landscape to improve community resilience to climate change

Key messages and recommendations

The findings from this project highlight that addressing climate disadvantage and building community resilience to climate change involves multiple factors. Many of these are already well known (Lindley and O'Neill, 2013) but have been confirmed and reinforced by the findings from the participatory approach used in this study. Importantly, however it is the combination of the more visible climate shocks (e.g. floods) and less visible climate stresses (e.g. increases in the costs of living) that affect much of the underlying dynamics of climate disadvantage and resilience. Understanding interactions between different factors is thus essential to understand how to reduce vulnerability and enhance resilience to climate change.

The findings also show how focusing on climate disadvantage can be helpful. Such an approach explicitly involves considering how climate change interacts with existing inequalities in a community. This helps map out existing dynamics and identify opportunities. For example, many policy domains actively seek to support those most vulnerable in society, and thus have potential for contributing to improving community resilience to climate change providing they are incorporated and combined with other resilience building activities. By understanding the dynamics of climate disadvantage, it is possible to examine more closely how these diverse policy domains can be more effectively inter-linked.

In addition to a focus on climate disadvantage, the systems oriented approach used in this project was helpful for considering relationships between different factors and not just factors in isolation. This highlighted the need to increase and continue efforts to strengthen collaborative working across policy sectors to deliver multiple goals. The dynamics also highlighted key leverage points that would help to make best use of limited resources. These included:

- **Focusing more on integrated working to take into account the integrated nature of challenges facing communities;**
- **Focusing on key bottlenecks in the system**, including enhancing community capacity for resilience and ability to manage household budgets;
- **Focusing on underlying stresses associated with climate change (e.g. food, energy, water prices) and other underlying stresses (e.g. chronic health issues)** which together combine to reduce resilience to shorter term shocks;
- **Capitalising on the opportunities provided by crises where** community interest in helping those most vulnerable occurs which then provides opportunities to build community capacity for resilience. These opportunities can also be stimulated through working with artificial crises as part of resilience building exercises.
- **Focusing more directly on reducing carbon emissions**, which is one of the most effective ways of enhancing resilience to climate change over the longer-term. This can include holistic approaches that integrate adaptation and mitigation measures.
- **Seeking to work more directly with underlying values, rules, norms and goals driving communities and developing interventions to influence these aspects**. For example, perceived rules associated with health and safety can constrain willingness of community members to engage in resilience related activities and the true costs of high carbon activities need to be made explicit and factored into decision-making.

A key area emerging from the results is the need to work more directly with communities. Communities are often defined as a group of people linked by a shared locality (place-based communities) around which policy and practice is often focused. However, communities are

heterogeneous, involving different people and interests, as the focus on climate disadvantage emphasises. Thus, although the visibility of 'place' may provide a useful entry point, embedded within this are multiple communities organised around specific issues and interests (communities of interest). To shape more joined up approaches for building community resilience to climate change there is a need to work with, and bring together, different communities of interest within communities of place. This is challenging in an environment of austerity, but no single organisation or group has the skills and resources to improve resilience of many communities and over large spatial scales. Supporting key community leaders and groups to mobilise and develop community capacity to self-organise and support collective action to improve community resilience to climate change is a critical leverage point, but is something that receives limited attention in practice.

Policy environments are dynamic and complex, involving a web of interrelated goals, ideas, decisions and actions, shaped by different levels of governance, organisations and groups. Improving community resilience to climate change involves working with multiple issues, yet resources and capacities may be limited and dispersed. Overall, there is therefore a need to enhance synergistic action across multiple policy domains. Four key areas are identified:

1) **Community resilience to climate change through improved planning policies:** Strong, diverse economies are an important aspect of community resilience but are not the only dimension. One area of concern raised by national policy experts is a narrow focus on economic growth in spatial planning that may lead to unintended consequences for other aspects of community resilience. Flexibility in planning policies is therefore key to reducing the likelihood of negative consequences for community resilience to climate change through planning approval processes. Adopting a more holistic approach to community resilience to climate change in governance systems may help shape more integrated thinking in planning policy.

2) **Policies for strengthening community capacity for resilience:** Although many policies highlight the importance of engaging communities in planning and delivering outcomes in practice this is not always meaningful. While the Community Empowerment Act (2015) aims to strengthen this, there is still limited focus on building community capacity to seize the opportunities for communities to better shape community life. A greater emphasis on strengthening horizontal as well as vertical links could help connect communities to share and collaborate more to build capacity. The main entry point for community engagement in Scotland is often community councils. Other groups, however, can also be very active and able to mobilise action. Appropriate entry points will vary between communities and an explicit focus on improving community capacity can help communities more meaningfully engage in decision-making and action. A clear limitation, however, is the lack of appropriate mechanisms to facilitate joined up decision-making and action at a community level, as many policies and practice are organised around one or a small number of predefined sectors, without any specific link to action for climate change (Scottish Community Development Centre, 2015; Skerratt and Steiner, 2013). Policies for strengthening capacity at a community level are therefore essential for improving community resilience to climate change. However, joined up decision-making *and* action to improve community resilience to climate change will also hinge on developing a more holistic approach and integrated policies in the planning system.

3) **Better coordination of data, information, knowledge and resources across levels and organisations for action:** There are often bottlenecks in the multidirectional flow of data, information, knowledge and resources. These need to be overcome to ensure that learning from action in communities informs policy development, data and resources are available to plan and deliver actions to improve community resilience in the longer-term, and collaborations develop to include organisations and communities with skills and knowledge that in combination can help build community capacity. Collaborations take time to build in practice but a focus on trust, understanding and mutual learning can help facilitate this process. Partnership working at a local

level, for example, community planning partnerships, provides one entry point where partnerships could be further strengthened and expanded.

4) **Adopting a more holistic approach to community resilience to climate change**: Currently community resilience initiatives focus on different outcomes, particularly preparing for, responding to, and recovering from extreme weather. This approach, although useful to clearly delineate roles and responsibilities for specific outcomes, can overlook the relationships between the factors that help shape outcomes in communities, such as interactions between climate shocks and stresses. A more systemic approach to community resilience across policy domains that focus on climate change more broadly can help widen perspectives to facilitate more joined up practice (Schmidt, 2011). Although some links between inequality/disadvantage and climate change mitigation and adaptation goals are currently evident in some policies, these links are often not explicit.

In conclusion, a focus on climate disadvantage can provide a practical, useful entry point for community resilience and this is supported by some existing policy instruments. However, critical to community resilience, as viewed through the lens of climate disadvantage, is a focus on understanding and making use of the relationships between: issues and policy goals; groups, organisations, levels of governance and communities; and skills, knowledge and other resources. More joined up policy environments and actions can potentially help facilitate these links to improve community resilience to climate change in the longer-term.

Section 3: Lessons learned about enhancing community resilience

This section reports on the lessons learned from the process used to work towards enhancing community resilience. It has four sections:

1) Overview of how the projects unfolded in each community;
2) Factors influencing outcomes in different communities;
3) Experiences of the process; and
4) Insights, critical challenges and working with tensions.

How the project unfolded in each community

Different kinds of outcomes

Diverse outcomes can emerge from community resilience projects, as highlighted by the different outcomes across the three communities outlined below. While immediate and tangible outcomes are important, there are also many other, less tangible outcomes that can emerge. These less tangible outcomes are all part of the process of building capacity for resilience over the longer-term. Understanding the diversity of outcomes is important to help target more effective project design and evaluation.

Three broad types of outcomes to emerge from the SBCRC project are identified:

- **Tangible outcomes:** These included aspects such as funding applications, securing funding for increased community engagement, feasibility studies, and workshop reports. These were then used by participants to develop further actions (e.g. feasibility study opened up opportunities for collaboration and funding applications for renewable energy schemes), new resources and changes in the scope of existing activities of the participants involved in the process.
- **Capacity outcomes:** This included the formation of new groups, development of new relationships and strengthening of existing relationships, and moves towards greater shared understanding and common goals. For example, a new collaborative flood group was established in Newcastleton, a new community resilience group was established in Peebles, and a number of new groups evolved and interactions were strengthened across some of these groups in Hawick, linked to the community engagement for the new flood scheme.
- **Learning outcomes:** Learning can mean many things, but generally involves a change in understanding of the person-world relationship (Fazey and Marton, 2002). Results of interviews with participants identified ten key learning outcomes (e.g. local issues, opportunities and support for action, who is disadvantaged, social dimensions of climate change impacts, working with others, policy and principles for designing and implementing community resilience initiatives).

Peebles: Climate change, commuter town and flood resilience

The storyline: Initial work in Peebles focused on bringing together a wide range of the many different community oriented groups. The first workshop explored the issue of climate disadvantage in Peebles. A community research team was established to examine this issue further, with a particular focus on known flood areas without an established community resilience group. This involved local residents already involved in community activities and the Scottish Borders Housing Association. In the second workshop, the Three Horizons tool was used to explore alternative futures for Peebles and to develop actions to help bring this about. This included a focus on adapting to flooding, youth employment and climate change mitigation. A series of flooding events hit the town of Peebles in close succession between the second and third workshops (i.e. three storm events in December and January 2015/ 16), which occurred during the wettest three month period in the UK since records began in 1910. In Peebles this flooding was calculated as a 1 in 50 year event. This focused attention on the need to expand the existing community resilience group to include all areas of Peebles, which was also a goal for SBC. The third workshop then applied the Three Horizons tool to explore how to bring this about in practice under the SBC community resilience initiative. In total 50 people participated in one or more of the workshops in Peebles, including 31 members of the community. These included representatives from a community resilience group operating in one area of Peebles, the community council, a local food growing enterprise and local residents working in the health sector. Organisations involved in the process included the Scottish Borders Housing Association, Eildon Housing Association, Scottish Environmental Protection Agency (SEPA), SBC Community learning and development and, in the later stages of the process, the police and fire service.

Outcomes: The final workshop in Peebles led to the establishment of a new community group, increasing the community capacity for collective action to build community resilience. This resulted in ten community members (local residents, representatives from an existing community resilience group operating in one area of Peebles and members of the community council), which has continued to meet and develop by bringing in new members and enhancing skills, knowledge and capacity to respond to diverse shocks (e.g. floods, snow, ice). The work has increased community capacity to collaborate with the SBC officers involved in the process and other public bodies such as the police and local fire service in the future to establish emergency plans, brought in new equipment and established local procedures. Evaluations indicated that learning outcomes were relatively high in Peebles compared to the other communities, such as learning about climate disadvantage, research skills, other people in the process, and community participatory tools.

Hawick: Climate change, flooding and urban regeneration

The storyline: A collaboration was quickly established in early phases of the project between the SBCRC project and the SBC team developing the Hawick Flood Scheme, which was in its early stages of community engagement when the SBCRC project began. The first workshop explored the issue of climate disadvantage and established the links between the SBCRC project and the Hawick flood scheme development. Following this, a series of flooding events was experienced in Hawick (estimated to be around the magnitude of a 1 in 55 year event). This occurred five days before the second workshop, resulting in a considerable increase in interest in the project. The second workshop was co-designed with the Hawick flood team and external experts in community participation, using different participatory tools including the Three Horizons tool. A key challenge was to enable community members to express their concerns while also turning the conversation towards a more positive outcome. Local impacts from the recent flooding were explored, followed by visioning and then considering how an alternative future for Hawick could be developed using community action to generate multiple solutions through changing the design of the Hawick flood scheme. An extensive programme of community action that included different work streams led by community members

(e.g. renewable energy, art, education, business, regeneration) then fed into the third workshop which provide a large exhibition space about the proposed flood scheme. This community event show-cased potential synergistic ideas for wider community benefits and identified community actions to be taken forward, such as opportunities for implementing community water powered renewable energy which was widely supported by local residents attending this final workshop. Following this, the SBCRC continued to support the development of the community renewable energy actions, including work to strengthen links with other work stream groups. 126 different people participated in one or more workshops, including 104 community members. This included national politicians, local councillors, community council members and representatives from the community resilience group, the High School and the Hawick flood action group. In addition to the project partners, other SBC teams involved included the Community Learning and Development, and Housing and Energy teams. SEPA, the local fire service team, NHS and the three Housing Associations operating in Hawick.

Outcomes: The process in Hawick led to tangible outcomes that included new studies and funding to continue community engagement and progress specific actions, for example external funding for an in river renewable energy feasibility study. New partnerships and groups have been developed within the community to continue to progress actions grouped around specific issues, such as cultural identity, renewable energy and supporting the local economy. The establishment of these groups and facilitating collaborative working between community groups and with SBC has increased the capacity for collective action to build community resilience to climate change in the future by joining together climate adaptation, climate mitigation and action to build resilience more generally. The work in Hawick generated higher capacity building and tangible outcomes compared to the other communities. The purposeful focus on climate change, the holistic and participatory approach used in the project, the collaboration with the flood scheme, experiences of flooding and community drive all helped shaped these outcomes. The most significant learning outcomes of participants related to learning about other people involved in the process and about applying participatory approaches for community engagement, particularly for the SBC flood scheme team.

Newcastleton: Community resilience, climate change and rural development

The storyline: Newcastleton was the smallest community involved in the project. In the first workshop, the issue of climate disadvantage was explored. Following an evacuation of households that were vulnerable to flooding in Newcastleton in January 2016, the second workshop applied the Three Horizons tool to explore alternative futures for the community and identify action to help bring this about. Activities between the workshops focused on building relationships and understanding between the project team and key community members, for example those involved in the community council and the community development trust. The third workshop was co-designed with key community members and examined four issues around which collaborative working was identified by community people as an essential component to move forward. The issues explored in more depth were; local flood risk management; establishing a community resilience group in collaboration with SBC; improving energy efficiency and; mobile phone and broadband coverage. Different local and national level government and non-government organisations were invited to contribute expertise around these key themes (e.g the forestry Commission, Broadband Scotland, Home Energy Scotland and Rural Housing Scotland). In total 60 different people participated in one or more workshops in Newcastleton, including 33 community members. In addition to the project partners, the Buccleuch Estate, SEPA, Scottish Borders Housing Association, Waverly Housing, The Bridge (a local community development NGO), the SBC Community Learning and Development, and Housing and Energy teams were also involved.

Outcomes: The latter stage of the process in Newcastleton led to two tangible outcomes: (1) the development of an action plan by the SBC Emergency planning team and key community members for a collaborative community resilience group; and (2) the inclusion of the community in an initiative examining broadband coverage in the wider area being led by one of the project partners (Southern Uplands Partnership). Capacity for collective action between the community and local organisations was enhanced by establishing a collaborative local flood risk management group and a meeting has occurred to take forward actions identified in the final workshop. Development of this group has been led by key community members and the Buccleuch Estate (a local estate manager) and has involved local organisations such as the Forestry Commission and SEPA who have duties under the Scottish Flood Risk Management Act (2009). The most significant learning occurred among participants from local organisations that were involved in this part of the project who expressed they had learned mostly about the issues (e.g. local estate managers, local authority representatives, local NGOs) facing a community and the principles for designing initiatives to build community resilience in practice.

Factors influencing outcomes

A direct causal relationship between individual project activities and outcomes is difficult to establish in community resilience initiatives. Instead, projects need to be visualised as *contributing* to achieving particular outcomes in combination with other factors and influences. Conceptualising projects in this way helps keep project teams open to new opportunities and possibilities, and ensures a more realistic view of how complex social processes unfold.

While the influence of different factors will be highly context specific and will occur in different ways at different times, through contribution analysis (Mayne, 2011) four key areas were identified that affected how the project unfolded and outcomes were achieved. These were:

- Project design and implementation;
- The initial context in communities;
- Challenges experienced; and
- External influences.

Project design and implementation

The way in which the project was designed and implemented had an important effect on the outcomes that emerged. Key aspects included:

- **Participation and facilitation expertise in the project team:** This was an important influence on the project as a whole as it helped shape and flexibly manage engagement and relationship building.
- **Taking a holistic approach:** This was very important in helping to facilitate learning because it enabled a broad perspective to be taken into the process, dialogue, and community capacity building across agendas. In Hawick, for example, the approach supported inclusion of a wider set of groups in the design of a flood scheme beyond just those immediately focused on flood risk (e.g. arts, renewable energy). This was also important for learning about complex issues such as climate disadvantage, which involves multiple factors (as outlined in section 2).
- **Futures orientation and process:** This was important for situating current challenges in relation to future aspirations and visions. This was critical for mobilising existing capacity in the community around specific issues to turn ideas into action. In one community (Hawick) it helped

shape tangible outcomes and enabled more visionary/broader outcomes to emerge. In all communities the Three Horizons futures method (Box 1) (Sharpe et al., 2016) was a very helpful tool in shaping dialogue, such as for ensuring that challenges in the present do not constrain possibilities for the future.

- **Focus on climate change:** This helped to contribute to many of the learning outcomes emerging in one community (Peebles) and to the tangible outcomes and focus on renewables which emerged from community work to co-design the Hawick Flood scheme. Our approach, which sought to directly bring in climate change, was counter to some of the advice received prior to the project that it is better not to work with a 'climate change' frame explicitly. Using the lens of climate disadvantage helped to facilitate linking climate change mitigation and adaptation to local issues and community resilience to climate change directly, such as inclusion of adaptive and mitigation measures as part of the Hawick flood scheme.
- **Focus on relationship building with local organisations and communities:** This focus was an important influence in all communities, and in one community provided much of the focus for the first half of the project. It helped ensure the design of workshops focused on both enhancing relationships within communities (bonding social capital) and between communities and local organisations (bridging social capital).
- **Time available in workshops to explore complexities:** Providing sufficient time in workshops enabled different patterns and links between issues and groups to be examined in depth. The time available in each workshop and across the process in each community as a whole was important in shaping learning outcomes, such as in the first workshop in Peebles which explored issues over a 3 ½ hour period.
- **Providing support within communities:** Support provided to community residents by the project officer between workshops filled capacity gaps and facilitated learning. For example, bringing together community groups and local organisations to explore issues and strengthen links helped to support discussion and knowledge exchange, increase capacity and progress actions in the future.

Initial context

- **Perceived urgency of issues in communities**: In some communities involved in the project members of the community demonstrated strong perceptions of the need for urgency to address a diverse range of local issues from the beginning of the project. Some of these issues linked directly to climate change resilience, for example, flooding (Box 1) while others were linked to more general resilience, e.g. IT connectivity. The perceived relative urgency of local issues influenced the extent to which people initially engaged in workshops and other activities.

Challenges

- **Time and resources available in SBC:** Limited time and resources meant that Council staff had to attend to key issues that affected their ability to engage in the project at certain times, such as during the winter storms in 2015/16. This influenced the type of participants involved in workshops and the nature of outcomes (e.g. almost all tangible and capacity building outcomes were by community members with far fewer direct operational outcomes for SBC). More widely, the time and resources available to Council staff also influenced the possibilities for developing deeper relationships and shared understanding with communities.
- Limits to transformational outcomes when aligning with initiatives: **The collaboration in Hawick p**rovided space for working towards action on the ground with positive outcomes related to a

flood defence scheme. However, this occurred within pre-defined boundaries – i.e. the focus on a particular goal to achieve a flood scheme within a very clearly defined timeframe. This limited possibilities for exploring alternatives (e.g. natural flood risk management) which was less central to the core remit of the flood managers involved.

- The value and constraints of existing community groups: **Values and constraints s**haped the development of links between groups focused on specific issues and the development of collaborations. Specifically, different groups, and issues around which they were clustered, tended to reinforce silos. Thus while considerable capacity existed, diverse agendas made it more challenging to develop more integrated actions. In all three communities, this affected the tangible and capacity building outcomes that emerged.

External influences

- Recent flooding: **Floods were a major important factor that influenced how activities and discussions progresses in each of the communities. Floods impacted communities at different times in the project (Figure 10). Following flooding, the events:** encouraged greater engagement of community members in the workshops; helped to align goals of the community action projects with goals of the council staff; and were critical in shaping tangible outcomes and capacity building (e.g. funding for a feasibility study for in-river renewable energy schemes in Hawick and the establishment of a new community resilience group in Peebles). The flooding crises clearly helped to galvanise interest in the project in a way that can be difficult to achieve in projects where experience of immediate shocks are lacking.

- Community drive: **The drive from local active residents differed between communities and in some was important for** enabling existing community capacity to be quickly mobilised to seize opportunities to work collaboratively with local organisations. In one community this was an important factor in enabling tangible outcomes and capacity building to emerge in the final stages of the process, e.g. the development of a collaborative group driven by local residents and involving local organisations to further explore local flood risk management.

- Collaboration with other initiatives: **Collaboration** provided a clear pathway to deliver outcomes on the ground and a sense of urgency to make the most of this opportunity, for example the flood scheme to deliver wider community benefits. This helped to shape the more tangible outcomes and capacity building to emerge from the process in Hawick.

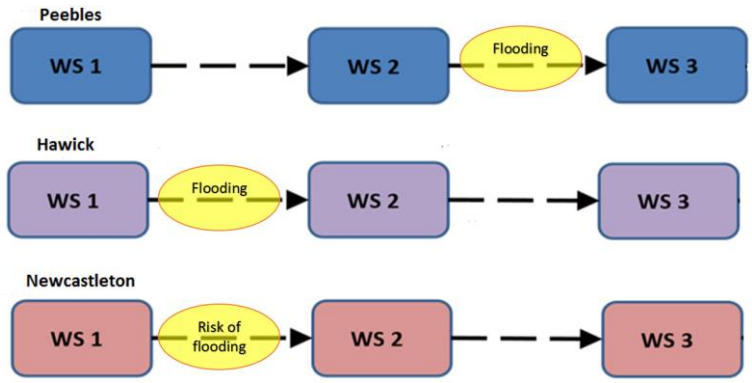
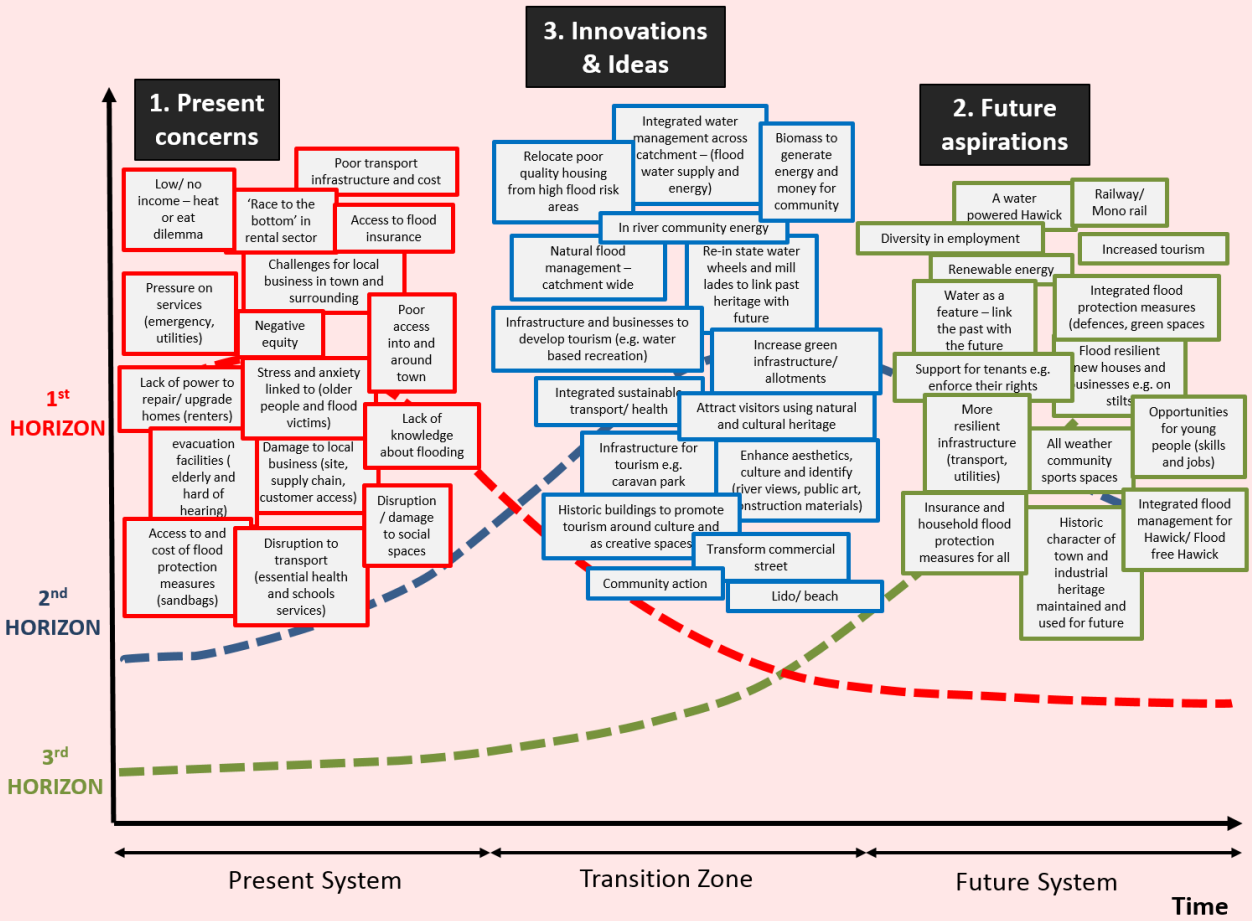


Figure 10: Points at which flooding impacted different communities involved in the SBCRC project.

Box 1: The impact of using a futures method to help situate current issues in relation to longer term aspirations and visions.

One of the important aspects of the project was explicit use of a futures method, called Three Horizons. This process helped shape dialogue about current challenges (the first horizon), future aspirations (the third horizon) and what needs to be in place in order for that new vision to emerge (the second horizon). This was particularly effective workshop two in Hawick, which occurred five days after the town had been affected by flooding. Tensions were high given the recent flooding. The 3H method enabled a conversation around the challenges (red boxes) that would hopefully decline over time. Conversations then led to the third horizon to identify key aspects that would be in place in a future Hawick (green boxes). This helped ensure future aspirations were not limited by current concerns. The role of a flood defence scheme that sought to achieve multiple outcomes was then explored as a key possible intervention in the second horizon to help enable the third horizon to emerge (blue boxes). Even though flooding had just occurred in the town and current concerns mostly related to flooding (red boxes) future aspirations related more towards addressing longer term aspects of urban regeneration. The outcome of the process was a highly motivated groups of community members willing to engage in further to work with engineers to help design the new flood scheme.



Experiences of the process

Different participants experience projects in different ways, depending on their perceived needs and expectations, prior experience and their role or participation in the project. During the interviews, participants were invited to explain their experience by providing metaphors to illustrate their subjective view of the process.

Human experience is dominated by metaphorical thinking, with suggestions that the only way humans understand the complexities of everyday life is by perceiving something as always being relative to something else (Lakoff and Johnson, 1980, 1999). Providing metaphors and exploring how they relate to experience can be a powerful way of explaining complex issues to others (Newell, 2012).

Fourteen different metaphors were provided by different participants, including members of communities, organisational representatives and project team members. Similar kinds of metaphors were then organised into six key thematic groups. A professional illustrator was then invited to provide an illustrative example of each of these themes, which was checked and modified where necessary by the interviewees. Each of the illustrations includes three panels of different parts of the journey (beginning, middle, end of project). The six groups of metaphors and examples provided by participants for each of these groups is presented in figure 11 below, followed by some key implications.

These metaphors highlight that there are many ways in which the same project was experienced by the different participants, their expectations, role in the project, or where they were 'coming from'. This in turn shapes what and how learning occurs, as well as how an individual engages with a project.

In practical terms, the elicitation of the metaphors from the interviewees provides analogies that help identify insights for future projects. Specifically, the metaphors highlight that building community resilience:

- Is a complex social process;
- Involves individuals working to different time frames and agendas;
- Involves working with many different, sometimes conflicting expectations;
- Involves negotiations of power and control;
- Includes individuals that take on diverse roles within the process;
- Can contribute to the formation of new, or strengthen existing, groups;
- Can contribute to greater shared understanding of objectives and goals;
- Can be experienced as a process of bringing together different interests, focus and capacities.

These points highlight that community resilience initiatives are inherently a social process where it is important to build social relationships, collaboration, and shared and integrated goals. The process will often be complex and messy, involving management of diverse values and expectations. It is an ongoing process and often slow, and requires addressing a range of practical, political and structural issues. It also highlights that effective resilience projects will require skilled facilitators to manage the diverse perspectives and issues involved. Nevertheless, providing there is sufficient focus on climate change, a focus on community building and relations between diverse partners can help to build appropriate collaborative and adaptive capacities, which then provide foundations for future actions.

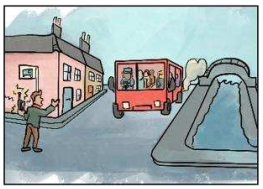
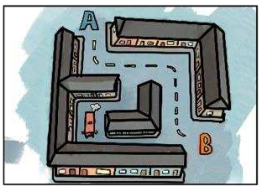
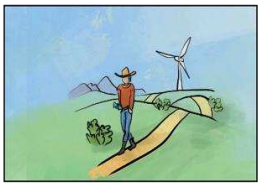
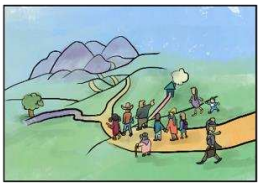
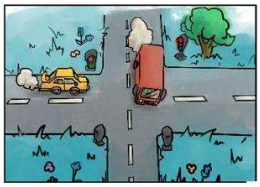
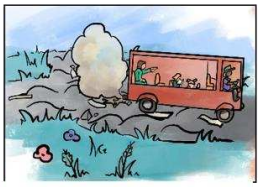
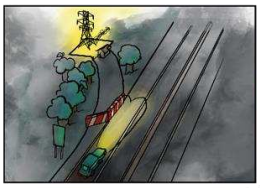
Description: Metaphor group	Example: Individual metaphor
Patient Passenger In this group of metaphors the term 'patient' denotes a willingness to listen and engage with others and their needs whilst interested in particular issues of their own. The term 'passenger' reflects a high level of involvement in the workshops which were viewed as a collective process.	 Different needs and interests (e.g connectivity, transport, flooding)  Going round the houses with different individuals and their interests Finally have the right people on board and now on to the next stage
Coming together This group of metaphors reflects connecting with others in the process to move from individual **community members** championing a specific issue to coming together as a group to better organise collective action.	 A long and lonely journey before the project focusing on specific issues  Individuals meet others who are all interested in the overall process Individuals in the group begin to share in planning the route ahead
Going It Alone This group of metaphors relates to **community members** involved in the process but with distinct interests and agendas that increases the likelihood of disengagement from the process to '*go it alone*' when the process is not closely aligned to their immediate perceived needs.	An emergency stop for the bus (the project) and individuals are ready to get off Individuals take their own bus which starts to go in a different direction Moving more quickly the bus heads away from the project on a different route
All On Board This group of metaphors reflects the process viewed as a collective endeavour that recognises that *all* needs and interests across communities matter and aims to bring about positive change for the greatest amount of people involved (*on board*).	Diverse groups with different interests and capacities The project 'raft' winding steadily around the three communities Bringing together three 'rafts' (communities), loosely paddling in the same direction
Passing the baton This group of metaphors developed in the **project team** focus on the need to implement the process in a flexible way during which team members step away to support and shift responsibility to enable others to take the lead and keep up momentum to continue action beyond the project.	Driving at a safe speed and navigating challenging, bumpy terrain  Many cross roads and opportunities to take different routes  Move from driving seat to direct a new person who is now driving
In Gear This group of metaphors emphasises that some **organisational representatives** are part of a wider trajectory which is moving at a specific speed and direction (*in gear*). This makes it more difficult to provide very tailored support for different communities.	In a fixed gear, following a specific route with limited ability to change direction  Some communities are cut off from the main route where blockades are up The driver supports some communities whilst others take their own route

Figure 11: The main groups of metaphors with examples

Insights, critical challenges and working with tensions

Many lessons have been learned from implementing the SBCRC project. Important insights relevant to designing and implementing community resilience initiatives in the context of climate change emerged from the interviews and participant observation of the project officer and evaluator. These lessons broadly relate to:

1) Design and implementation;
2) Skills and expertise required; and
3) Opportunities.

These translate into a set of key recommendations for projects seeking to enhance community resilience (Table 1).

There were also key challenges involved in the project that are important when designing and implementing resilience initiatives. Community resilience involves engaging with change, which in turn involves challenging existing ways of doing things. A critical challenge for the SBCRC project related to the limitations of current governance arrangements that hindered the ability of local authorities, other organisations and local communities to work flexibly to address the growing challenges facing local communities. Some communities felt they had limited autonomy to take actions forward. On the other hand, local authorities under current governance arrangements also needed to retain a degree of oversight to ensure adherence to legislative requirements and statutory obligations. Local authorities and other organisations, despite very limited resources, also had obligations to large numbers of communities that all demanded attention. Moving towards greater levels of community resilience and autonomy therefore will often require changes in the relationships, responsibilities, ownership and expectations of different parties involved. This includes how partnerships emerge and are managed, such as between the local authorities and local communities. Opportunities are emerging for re-shaping relationships through the Community Empowerment Act (2015) in Scotland, although it is too early to make judgments about its significance. It will be critical, for example, to bring together policy streams of climate change with community empowerment to ensure community activities are more directly aligned with the growing climate challenge.

There were also challenges related to project implementation, and not all members of the project team felt the project had been useful. Where frustrations arose, they were mostly around a perceived lack of specific and immediate focus to the project. Key criticisms were that while it was recognised that stronger relationships and collaborations had been achieved, it was difficult to see what could be taken forward, especially given the limited resources available to the local authority and communities. There were some concerns, for example, that expectations in communities had been raised but that there were simply insufficient resources available for doing much more than was already happening. In short, the kind of project undertaken was perceived by some to be not taking into account the critical realities of resources of time and money and the need for delivering immediate operational outcomes. Nevertheless, as highlighted by the diverse metaphors of participants' experience of the process and the interviews which were part of the evaluation, many others felt the project had been of major value and that approaches that recognised the complexity and challenging nature of both community resilience and climate change were needed. Many of the participants highlighted that trying to find ways to navigate the integrated nature of the challenge was important, and that it was necessary to try to do this through participatory processes that built social relations and enhanced wider capacities for change.

Time available to project staff was a key challenge in the project. The project took considerable effort, mostly in community engagement and organising discussions. This was necessary to provide the space for shared ownership and responsibility of different participants. For local authority staff, however, investing time in the project was a significant challenge due to their many other commitments. Thus

while it is difficult to see how shorter projects could achieve similar outcomes, it is important to consider alternative approaches. Where clear objectives and initiatives and a degree of consensus about how to take things forward already exist within a community, it can be possible to move more quickly and directly. This was demonstrated in Hawick, where participation in the SBCRC project was enhanced by working alongside the development of the flood scheme.

Finally, a key limitation was that the project had relatively limited engagement with those most disadvantaged in society more generally (although it did involve many who work with such groups). This was perhaps not surprising given the emphasis of the project on workshops as the key medium for engagement. For projects to significantly engage with such groups, very different kinds of methods are likely to be required, such as working directly with individuals. In this project, with an implementation phase of working in the communities being only just over one year, it is unlikely that an alternative approach would have yielded as many outcomes. To achieve more transformative kinds of outcomes, approaches that can directly address issues of power balances would be necessary. This, however, is difficult, given that issues of power are usually not explicit and addressing them requires changes in social and political relations in situations where those involved are unable or not willing to do so.

Given the importance of power balances for climate disadvantage and climate justice, there is a need for relatively innovative action research projects that can explore how to tackle these dimensions in a way that goes beyond just identifying and characterising the problem. Such projects need to focus on learning through doing, but will require funders and collaborators that recognise the need for innovation and approaches that use trial and error, where initially specified outcomes may not be guaranteed but where new opportunities and different outcomes may emerge during a project. Such flexibility is essential for affecting participation and learning (Parfitt, 2004).

Overall, the challenges raised and posed by the nature of the project can be summarised as a set of critical tensions (Table 2). These tensions are dilemmas that cannot easily be reconciled. Instead, a flexible approach to project management is needed that can 'dance' in the space between each of the extremes (Höijer et al., 2006) in a way that involves continuous reflection and re-orientation in relation to where a project should be situated. The dilemmas represent the different ways in which participants in the process experienced the project, with some valuing aspects that delivered more tangible and immediate outcomes and others valuing aspects that encouraged learning and exploration, emphasising dialogue as a key part of the process of change. The tensions identified emerged through reflection on the implementation of the project, through analysis of the factors that influenced the project outcomes, and through the subjective metaphors of the participants about their experiences. Importantly, they provide future community climate resilience workers to explore with team members different expectations and perspectives about project delivery, which could help to surface and resolve any critical issues early on.

Design and implementation	Skills, expertise and capacities for project teams
Design and implement for participation and engagement	Knowledge brokering, participation, facilitation
Have a direct focus on climate change and enhance climate literacy	Systemic capacities that enable working with inter-related issues
Take a holistic and systemic approach to embrace complexity and interconnectivity	Local expertise about context, relationships and networks
Focus on climate disadvantage, with appropriate methods for inclusion	Diverse expertise in core team (e.g. systems and specific technical expertise)
Orient conversations that situate the present in relation to the future	Ability to bring in additional specific expertise where necessary
Partner with local organisations	Strategic oversight to balance flexibility with focus
Ensure project officers are locally embedded to immerse within social setting	Capacities for relationship building and collaborative working
Strive for credibility (high quality) and relevance (usefulness)	**Opportunities**
Ensure senior support in partner organisations	Turn crises into opportunities
Ensure time for developing shared understanding and desired outcomes in core team	Develop basic plans to capitalise on both known and unanticipated opportunities
Ensure objectives are flexible to increase the perceived added value for partner organisations	Work with local interests of community members
Ensure clarity of project team roles	Work with existing community drive
Engage communities in early stages of project design rather than assuming they will participate	Collaborate with other projects/ initiatives within communities
Use existing engagement routes to strengthen multi-stakeholder collaboration	Feed up local issues, actions and outcomes into regional or national scale policy
Focus on relationship building with stakeholders	Be legacy oriented, viewing projects as part of a longer journey within a wider social setting
Link activities across different issues and with local interests, initiatives and expertise	
Identify and work with change oriented leaders	
Be clear about what is possible	
Work with existing resources and capacities	
Provide spaces for dialogue that reduce hierarchies and encourage participation	
Be flexible in workshop design and facilitation to respond to local needs	
Work with and link climate change to local issues	
Ensure time is available to explore complexities	
Find simple language to convey complex issues	
Provide support to develop new collaborations and relationships **between stakeholders**	
Ensure the process is flexible to enable diverse outcomes to emerge	
Design for learning and knowledge exchange to maximise potential for future capacities	
Make learning explicit so that changes emerging in project are more visible	
Iteratively feedback learning to adaptively shape a project	
Build in legacy planning to enable continuation beyond projects	

Table 1. Factors to consider when designing and implementing community resilience to climate change

Tension	Explanation
Holism vs Focus	Integrating issues and connecting agendas is important to enhance community resilience, but too broad an approach can limit focus and direction.
Learning vs tangible action	Encouraging learning about the complexities and inter-related issues is important for climate resilient communities and for building adaptive capacities, but with limited time and resources this can detract from achieving more tangible outcomes ('getting things done').
Climate change focus vs local interest	Climate resilient communities need to focus directly on addressing climate change issues, but this may not be directly aligned with immediate interests or perceived needs. This raises a key challenge about how to maintain interest while also moving towards a more genuine focus on climate change adaptation and mitigation.
Quick wins vs systemic long-term change	Achieving immediate actions and outcomes is important in projects to maintain interest, but this can be at the expense of focusing on putting in place a more sustained legacy from a project (e.g. would it have been more effective simply to focus the effort of the project officer on funding for a larger project rather than on extensive community engagement?). Local authority staff are also, for example, under extensive pressure to deliver day to day activities and have very limited resources to focus on integration across sectors and time consuming engagement
Depth vs breadth of community engagement	Considerable attention in the SBCRC project was provided by Council staff to the engagement process in a small number of communities. This is not sustainable for working over a larger number of communities to which the Council has an obligation. While collaboration was considered to be important, the project led to a degree of frustration about how to take the work forward by some Council staff.
Participation vs direction	Genuine participation and engagement takes time to form new or strengthen existing relationships and also requires perceptual changes in the relative roles of the individuals or groups involved to enable longer-term capacity and ownership and responsibility to emerge. Yet being highly participatory can sometimes detract from achieving immediate goals, which can sometimes be better achieved through greater control and direction.
Structure vs flexibility	The structure of the process (i.e. 9 community workshops) was essential to ensure progression in the project, and a degree of flexibility was then provided by using these spaces in which to conduct different activities. However, this process was not entirely flexible and, in one community, participants indicated that they would have appreciated a completely different use of the resources to progress local issues that were available to the project.
Participation as empowerment vs participation as a means to an end	The project sought to engage groups and individuals in a participatory process that aimed to enhance both ownership of, and responsibility for, action. However, where participation was most successful (Hawick flood scheme) this was mostly focused on achieving a pre-determined end. While it took a pragmatic approach, the focus in Hawick potentially detracts from empowering communities in a more fundamental way. There are therefore tensions as to whether projects should or can aim to be genuinely empowering (with participation viewed as an end in itself and ideas generated to be community owned) or whether the projects and participation will mostly be viewed as a means to an end.
Providing support vs encouraging autonomy and initiative	In many communities, support is needed to manage and work with the complexities associated with climate change. However, provision of too much support can create dependency. Thus there is a balance and tension between how much support should be provided and how to encourage greater autonomy. Facilitators therefore need to be in a position to step back from a community to help develop and encourage autonomy and initiative in ways that encourage legacy and continued action after a project.
Data collection vs action	The SBCRC initiative was an action research project. While the structure of the process was primarily driven by action and aimed to convene spaces for dialogue, it also aimed to collect data to enhance learning about climate resilience. Some of the activities were therefore not always set up to provide the most robust form of data collection which would have been achieved by a more traditional kind of research project. Yet if this had, it might not have enabled the kinds of 'know how' knowledge on community resilience or resulted in the action oriented outcomes achieved.
Independence vs embeddedness	There was a need for a degree of independence for effective facilitation in the project workshops. The project lead, who often facilitated workshops, was clearly not entirely independent, while other project members also acted as participants in the process. A tension therefore emerged around the extent to which it was desirable or possible to have a fully independent facilitator.

Table 2. Tensions in approaches to community resilience projects.

Key messages and recommendations

From the process delivered across the three communities and the analysis of the different outcomes, six messages and recommendations for future community resilience initiatives have been identified.

1) **Community resilience building requires a focus on climate change.** How community resilience initiatives are framed influences goals, processes and outcomes. Community resilience varies, for example, depedending on whether it is framed in relation to emergency planning or more broadly. A direct focus on climate change in this project was important for stimulating discussion about an issue that is not generally a part of everyday conversation. Engaging participants in conversations about climate change is essential to enhance understanding of how climate change will impact individuals, localities and communities and to ensure attention is given to reducing carbon emissions as well as adapting to its impacts. Maintaining attention to climate change was achieved by: (i) taking a broad holistic approach; and (ii) focusing on climate disadvanatge, both of which enabled the project to link with local issues. Through a direct focus on climate change it was possible to examine and work with the complexities associated with climate change.
2) **It is important to view community resilience as a social process.** Improving community resilience involves bringing together multiple people, interests, capacities and perspectives. Viewing community resilience as a social process helps to maintain focus on working with these complexities and to move towards aligning goals and developing collaborative actions whilst negotiating existing structures and power dynamics. The metaphors of the process developed in this project illustrate some of the different perspectives and experiences of participants towards shaping new and strengthening existing relationships and ideas to build collaborative capacity. This also emphasises the importance of establishing a project team with diverse skills and knowledge, especially in relation to knowledge brokering, participation and facilitation.
3) **It is important to link projects on climate change with existing capacities and concerns within communities to increase relevance to participants.** Developing an understanding of local concerns involves drawing on different sources of knowledge, for example, from key community members and organisations. A dedicated, embedded project officer within a project team that includes local practitioners is an important part of this. However, some local authorities may not always have capacities to further develop relationships with the diversity of people who make up a community. Thus, considerable time and flexibility is critical for effective delivery of project outcomes.
4) **It is important to make best use of opportunities.** Aligning projects with other initiatives and capitalising on wider experiences in communities (e.g. of flooding) provides important opportunities for mobilising action. In some cases, however, there can be trade-offs. For example, joining existing initiatives may constrain freedom for innovation and ability to capitalise on wider opportunities when they emerge. Care is thus needed to both capitalise on opportunties while also ensuring that more transformative kinds of change can be achieved
5) **There is a need to work with complexity and embrace learning.** Improving community resilience to climate change is a complex process, involving many different issues, scales, resources and capacities. Initiatives thus need to find ways to encourage learning about the nature of the complex issues, contexts, relationships and how to find new ways to approach challenges. An explicit focus on learning and applying this learning in practice in community resilience initiatives is essential for enhancing adaptability, which is a central and core aspect of resilience thinking.
6) **There is a need to be explicit about and work with tensions, such as those between different perspectives, goals and expectations.** The tensions identified in this project (Table 2) can be used to help shape the design and implementation of future community resilience projects, such as through providing a focus for structuring dialogue in project teams about expectations and perspectives on project delivery and how the tensions can be navigated.

Section 4: Conclusions & Recommendations

The SBCRC project was complex and involved extensive and continued engagement of the project officer, with the work mostly focusing on managing relationships and encouraging participation to address the different agendas involved. Key tangible outcomes include: the establishment of a community based resilience group; changes in the design of a flood-scheme to reflect wider needs of the community involved; and the development of action plans and inclusion in an initiative to enhance access to communication technologies. Participants also reported that they had established new working relationships (e.g. between statutory organisations and communities, and across different organisations and community groups) and had undergone significant learning (e.g. about local issues, opportunities and support for action, understanding the nature of disadvantage, the social dimensions of climate change impacts, working with others, policy and principles for designing and implementing community resilience initiatives). Most of the outcomes in communities were only just emerging when the project ended. Nevertheless, it was beginning to show considerable promise, with some longer-term legacies emerging. Critical contributing factors shaping outcomes included: the holistic, participatory and action oriented research approach; a direct focus on climate change; ability to draw on diverse expertise for project delivery; and a focus on both understanding resilience and 'doing' resilience in practice.

While there were many positive aspects, there were also a number of challenges and critical tensions. Community resilience projects need to be approached with careful consideration of the complexities involved. In particular, in the context of declining resources, it is difficult to see how community projects such as this one are likely to receive the funding they require to fully engage with the diversity of stakeholders needed to address complex and inter-related challenges. Further, in many local authorities, the resources dedicated to longer-term community capacity building are often facing resource cuts. As such, a clear message from this report is that, in the current circumstances, efforts for enhancing community resilience need to focus on making best use of the opportunities provided by collaborative working across different sectors and for finding ways to build on existing capacities available within communities. External support will generally be needed for these endeavours and to ensure there is a focus on those most disadvantaged by the multiple dimensions of climate change. This will require strategic work at National levels to encourage a more synergistic and integrated policy landscape that can capitalise on the opportunities for greater collaborative working across different sectors and which enhance the enabling conditions for community resilience.

Recommendations: Building community resilience to climate change in practice

- A clear and explicit design and approach that balanced structure and flexibility combined with inclusion of a project team with diverse expertise (including in participation and facilitation) was essential for the delivery of the Scottish Borders project. Future initiatives therefore need to carefully consider how they can best contribute to enhancing resilience, how they can draw on participation and facilitation expertise when this is not immediately available, and how more effective partnership working between communities and different institutions can be enhanced to support community resilience initiatives.
- The most effective way of enhancing resilience in the long-term is to reduce carbon emissions. Community resilience activities therefore needs to explicitly engage with climate change to: build

climate literacy to encourage longer-term engagement with the issue; enhance understanding of the implications of climate change for individuals, localities and communities; and to encourage holistic and innovative responses such as measures that simultaneously enhance mitigation and adaptation (e.g. building flood schemes with integrated renewable energy measures). Overall, this may require explicitly engaging with climate change in community resilience building activities, albeit through approaches that clearly link climate change to local issues.

- A key finding was that many different aspects of climate disadvantage interact over time, involving both climate shocks (e.g. flooding) and climate stresses (e.g. increasing food and energy costs). Together, these can lead to critical thresholds which are not immediately apparent when the primary focus is on preparing for immediate shocks and emergencies. Successful community resilience initiatives will therefore be those that seek to address underlying stresses that give rise to vulnerabilities. This will be more likely if initiatives view resilience through the lens of climate disadvantage.
- Resilience building is a complex social process, involving multiple people with diverse roles, interests, values, expectations, capacities and perspectives. Future resilience initiatives therefore need to ensure they give considerable attention to these complex processes and, while having a focus on shaping action, also encourage learning, capacity building and relationship building.
- A holistic approach was adopted in the SBCRC project. This focused attention on the importance of, and need for, bringing together many different issues, scales, resources and capacities. Given that community resilience emerges from the relationships between these aspects, future resilience initiatives need to ensure that they take a sufficiently wide perspective of the different elements involved to avoid missing critical opportunities or counterintuitive impacts of interventions.
- Many different tensions emerged in the Scottish Borders that related to different challenges experienced in the project. While many of these tensions are not easily reconciled, they provide a useful basis for dialogue among team and community members about different expectations and the challenges involved. Further development of the tensions (Table 2) as a 'dilemmas tool' to help identify issues that need to be addressed in community resilience projects would provide useful opportunities for building on the learning that emerged from this project.
- The participatory and action research approach was important for engaging diverse perspectives, developing a deeper understanding of local and more generalisable aspects and for encouraging actions towards community resilience. The flexibility of the funder was a critical factor that enabled this approach. Greater attention to action research is therefore needed to provide meaningful insights about 'doing' resilience in practice, which in turn requires funders that are willing to be sufficiently flexible to allow projects to navigate the complexities involved in multi-scale projects and to achieve multiple benefits relevant to the diverse stakeholders involved.

Recommendations: Strengthening policy environments for community resilience to climate change

- Findings from the project identified important areas through which community resilience can be enhanced and issues which may be important to reduce climate disadvantage. These areas represent key leverage points for more strategic and targeted action. They include a need for greater focus on:
  - Integrated working to take into account the integrated nature of challenges;
  - Addressing key bottlenecks in the system, such as enhancing community capacity for resilience and ability to manage household budgets;

- Working with the underlying stresses directly associated with climate change (e.g. changing food, energy, water prices) and the synergies of these with other stresses (e.g. chronic health issues) which together combine to reduce resilience to shorter term shocks;
- Capitalising on the opportunities provided by crises where community interest in helping those most vulnerable occurs, which then provides opportunities to build community capacity for resilience. These opportunities can also be stimulated through working with artificial crises as part of resilience building exercises.
- Understand underlying values, rules, norms and goals driving society and finding alternatives more aligned to environmentally and socially sustainable patterns.

- The generally narrow focus of spatial planning on economic development was identified as potentially leading to negative consequences for community resilience. Thus, spatial planning in Scotland needs to be comprehensively reviewed to identify gaps and opportunities to help communities and local authorities to work collaboratively to take action to build resilience to climate change. This needs to take account of longer-term climate change impacts and encompass links between the physical, man-made environment and social aspects, which are a critical dimension of community life.
- The importance of supporting and actively strengthening the development of community capacity was identified as a critical area at community levels. This support from a more integrated and synergistic national policy landscape. There is therefore a need to find ways to develop community capacity nationally to help communities more meaningfully contribute to shaping locally relevant actions and outcomes that deliver multiple benefits, including addressing the challenges associated with climate change. The Adaptation Scotland learning exchange and similar networks are a useful resource for enhancing peer learning in this domain.
- Enhancing coordination across levels of governance (from the local to the national) and between organisations was identified as being important for longer-term success of community resilience. National decision makers need to remove some of the barriers that inhibit the multi-directional flow of data, information, knowledge and to more effectively direct resources to match needs to create more space for the development of more effective collaborative approaches in practice.
- Adopting a more holistic approach to community resilience that goes beyond emergency management was viewed as a key opportunity for working in a more joined up way across diverse sectors. For this to happen, community resilience needs to be more integral to national policy development and decision-making. Explicit effort is needed to include a wide range of policy sectors to shape policy goals that help rather than hinder community resilience to climate change.

Conclusion

Ultimately, climate change is a symptom of the current ways in which society is structured and organised. As such, major societal change is likely given emerging shifts to low carbon economies. Climate change is also a stress multiplier, potentially worsening existing challenges, such as inequalities within communities. Building community resilience in this context is thus a complex process of social change that requires concerted efforts to shape goals, identify common ground and mobilise disparate capacities and resources. Achieving such change requires a much more explicit focus on holistic approaches that galvanise local action and stimulate ownership and responsibility for climate action across different governance levels. Silo thinking is no longer an option and risks producing piecemeal and ineffective solutions, or even reinforcing existing problems. Instead, strategic action is needed to enhance community capacity for resilience and help families manage household budgets, while also seriously engaging with challenging underlying assumptions, values, norms, and rules that give rise to climate change. These actions need to be supported by more

integrated policy landscapes that capitalise on the opportunities emerging for more integrated working that stimulates innovations that can achieve multiple health, equality and environmental outcomes and which provide strategic leadership to promote the building of community resilience to climate change.

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