

Scottish Borders Climate Resilient Communities Project

Part 1: Findings on community resilience to climate change and climate disadvantage

December 2016

Working paper report

This document is a working paper from the Scottish Borders Climate Resilient Communities Project, funded by the Joseph Rowntree Foundation.

The report provides additional details to the main findings and summary reports.

It is intended as a working document only, and therefore should be interpreted as a draft with findings and analysis that are not complete.

Authors

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

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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 that 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 levels, at community levels and how resilience could be facilitated at national policy and strategic levels. These findings were 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 enhance 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 that are 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.

Introduction

This is a working paper which outlines initial findings of the Scottish Borders Climate Resilient Communities Project (SBCRC), which was funded by the Joseph Rowntree Foundation as part of its climate change programme. The project was delivered between May 2015 and September 2016 and was a collaboration between the University of Dundee, the Scottish Borders Council (SBC), the International Futures Forum, the Tweed Forum, the Southern Uplands Partnership and the Scottish Association of Marine Science. The SBCRC project had two main aims: 1) To improve understanding about community resilience in the context of climate change and in relation to climate disadvantage; and 2) encourage action towards, and enhance learning about doing, resilience in practice. The project involved action and participatory research, which focused on convening conversations and workshops and other activities in three communities in the Scottish Borders.

This report focuses on the first aim and seeks to understand the dynamics and nature of community resilience in relation to climate change and climate disadvantage. It addresses three main questions:

- 3) Who is disadvantaged by climate change in communities and why?
- 4) What are the key underlying dynamics of climate disadvantage at a community level?
- 5) How can national policy better support community resilience to address issues of climate disadvantage?

The report is intended to be of relevance to those interested in developing appropriate policies and actions related to the building community resilience to climate change, such as practitioners in local authorities or non-government organisations and to those developing or implementing policy at national levels. Findings emerging from the project about the lessons from delivering the action oriented aspects of the SBCRC project are presented in the sister report.

Overall, this report includes four main sections: Background to the policy context in which this project was conducted; the methods used for data collection and analysis; the results; and a discussion which leads to conclusions and recommendations.

Background and Rationale

Climate change, community resilience and climate disadvantage

In a world with a changing climate significant societal change is inevitable. Keeping the world within the globally agreed 1.5°C rise in temperature will require significant and rapid social and technological transformations over a very short timescale (3-5 years). Even if these goals are not met, then major change will still occur through planned or forced re-organisation of society due to future intensified attempts to reduce carbon emissions or because of increasing impacts of climate change. This raises a critical question for policy and practice: how can learning be accelerated to enhance resilience of communities in fair and equitable ways in the face of increasing impacts of climate change? So far science and society has excelled at understanding the climate problem and identifying some of the solutions, but has yet to seriously and meaningfully engage with the questions about how to put the kinds of changes in place to significantly enhance adaptation to inevitable impacts of climate change and substantially reduce carbon emissions. Given that awareness about climate change is growing, there now needs to be concerted action to accelerate learning about making social and practical changes happen.

One of the key areas receiving increasing attention is community resilience. The extensive work on community resilience that has already been conducted is summarised as ten key principles based on what is needed to establish community resilience in relation to climate change (Table 1). These principles highlight, for example, the need for integrated and systemic approaches, enhancing ability to respond to both shocks and stresses, and direct engagement with climate change (i.e. reducing carbon emissions as well as adapting to its impacts). Given that climate change is directly or indirectly becoming one of the most pervasive drivers of change affecting communities, any work that seeks to enhance community resilience needs to also consider climate change as part of the process of enhancing resilience. This includes an explicit focus on assisting communities to make the necessary transitions and changes needed to both adapt to climate impacts and be able to contribute to mitigating carbon emissions.

A critical aspect that receives relatively limited attention in relation to community resilience is taking into consideration those most disadvantaged by climate change. Community resilience emerges through complex social relations with different individuals and groups within communities that have different capacities and opportunities to respond to change. Not all people are therefore affected by the impacts of climate change in the same way. Key social structures and relationships and political, social, economic and cultural conditions often reinforce marginalized groups when they are faced with change (Câmpeanu and Fazey, 2014). How climate change affects and reinforces marginalized and disadvantaged groups is therefore a necessary and important part of enhancing overall community resilience.

Disadvantage to climate change is closely aligned to three important injustices (Preston et al., 2013). Low income families tend to be most affected by climate change impacts (e.g. many parts of Scotland have social housing that was built on cheap land in the floodplain); are less able to access the benefits

of climate support (e.g. capital is needed to install solar panels to gain from income from production of electricity); and tend to be the lowest carbon emitters (they travel or consume less). Thus some people will be simultaneously vulnerable to the impacts of climate change and least able to capitalise on new opportunities provided by climate change even though they contribute least to the climate problem. For the purposes of this report we refer to this combination as climate disadvantage. This highlights the importance of actively trying to find ways to reduce, rather than reinforce, inequalities as well as avoiding stigmatizing disadvantaged people when working with community resilience (Norris et al., 2008b). This necessarily involves considering how activities interact with wider policy conditions operating at social scales within and beyond a single community.

In summary, this report seeks to understand community resilience in relation to climate change and climate disadvantage. The next section first explains the local context in which the Scottish Borders Climate Resilient Communities project was conducted, followed by the wider national policy context in which the Scottish Borders is located.

Principle	Explanation
1) Enhance adaptability and flexibility	Adaptation and flexibility is a fundamental principle underpinning resilience. Many definitions of resilience being related to the ability to absorb and adapt to change without incurring major alterations in its 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 change rather than simply small adjustments.
2) Take account shocks and stresses	Enhancing community resilience needs to enhance adaptability and responses to both immediate shocks (e.g. flooding) and other stresses, such as through longer term, 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 both 'specified' resilience (i.e. to something known or specific) and generalised resilience (i.e. for unanticipated events).
3) Work across social 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 there may be a reluctance in some communities to engage in carbon reduction.
4) Take account of interrelations	Climate change emerges from, and impacts on, a very wide range of cross-sectoral concerns with the production of greenhouse gases emerging from a wide variety of diffuse sources. Systemic approaches that can help understand the horizontal interconnections are therefore important.
5) Focus on reducing carbon emissions	One of the most effective ways of increasing resilience to climate change is to reduce carbon emissions to sustainable levels. Arguably, any form of community resilience building needs to focus on climate change as the issue is becoming a pervasive and key driver of change worldwide.
6) Enhance awareness of climate change	Working with climate change requires citizens that have an interest in the climate challenge. Community resilience building therefore needs to seek to build climate literacy and engage individuals by situating conversations in relation to locally perceived issues and local dynamics. To do this, creative public participation methods that can engender positive emotions such as hope, responsibility, care, and solidarity, and inspire adaptive action and produce transformative change are needed to achieve this.
7) Futures orientation	While evidence from the past can help inform change, it may limit what is perceived to be possible or constrain imagination and creativity. Enhancing community resilience, in contrast, involves the conscious activities of those involved, including through the networks, behaviours, imagined futures, decisions and perceived options, and collective actions. Consequently new ways of thinking about the future are needed that release creativity, imagination, and encourage innovation.
8) Work with diverse resources and capacities	Nurturing and supporting different kinds of resources are needed 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 elements, such as political and cultural forms of capital.
9) Focus on processes and pathways	While the characteristics of, and resources for, resilience are important, it is also important to focus on the processes involved in encouraging resilience. This requires engaging with empowering forms of change that encourages both responsibility for, as well as ownership of, a change process. This involves changing power relations in order to enable those most disadvantaged to climate change to engage and take initiatives forward.
10) Focus on those most disadvantaged	Not all people are therefore 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 least able to invest and gain from government schemes to reduce emissions (e.g. subsidies for solar panels). Focusing on those most disadvantaged to climate change is therefore a key requirement for building community resilience

Table 1. Principles for enhancing community resilience in relation to climate change.

Local Context: Scottish Borders, Resilience and disadvantage

The SBCRC project was focused on the Scottish Borders. This region is a largely rural area located in the south east corner of Scotland. It lies in intersection between three major cities; Edinburgh to the north (Scotland), Newcastle to the south 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 area is the River Tweed and its tributaries and many of the towns developed alongside these waterways which provided important sources of energy to power a once thriving textile industry. The area is still well known for this but the industry has declined due to wider global economic changes. The region is undergoing changing demographics, with loss of young people and an ageing demographic profile, partly because of loss of young people who leave to seek employment. The area is also well known for rural recreation, such as game fishing and mountain biking. In the surrounding hinterlands around the towns and villages large scale farming and commercial forestry are also important parts of the local economy.

In the Scottish Index of Multiple Deprivation the Scottish Borders is divided into 143 areas (data zones), with five of these areas within in 15% of the most deprived areas across Scotland. This includes Burnfoot, which is an area within Hawick. Within less densely populated areas and smaller communities there may be some areas more disadvantaged than most which are hidden in these national datasets (Scottish Borders Community Planning Partnership). Out of the 143 areas, 130 are exposed to some sort of flooding. Kazmierczak et al. (2015a) examined the levels of flood disadvantage across the Scottish Borders and identified 8 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., 2015b).

The SBC is one of the largest employers in the area. Since the 2008 financial crisis there has been a strong focus by the UK government on financial deficit reduction (Stanley, 2016). This has included continued reduction in the budgets available to deliver public services, with local authorities being particularly affected. This includes the SBC, which has experienced job losses and organisational restructuring. From 2010 to 2015 the council reported savings of £17.8 million but predicts that the costs of maintaining the current level of service provision over the next few years will increase by £27.8 million (Scottish Borders Council, revised 2015). Within this challenging economic context, the SBC has continued to work to deliver key services and has successfully been able to achieve some significant projects, such as the reopening of a section of railway that had been closed since the late 1960's. This is widely perceived to be very successful, with numbers of people using the service in the first 6 months greatly exceeding expectations. There is now a focus on exploring how this could be expanded to enhance connectivity and the local economy.

There has been a long term focus on partnership working between public bodies in the Scottish Borders. This has included partnership working with emergency services and the SBC to improve coordination for disaster response. More widely this has helped shape the establishment of community planning partnerships to better coordinate this partnership working with the aim of delivering improved outcomes in communities, as set out under the Local Government in Scotland Act 2003 (Audit Scotland, 2013). This partnership working is framed around a number of themes which focus on economic growth, maximising the impact from the low carbon agenda and reducing inequalities (Scottish Borders Council, revised 2015).

SBC has also made significant attempts to increase linkages between community actions 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. These groups are beginning to widen their scope and be more engaged in other activities beyond just

resilience, such as clearing footpaths and potentially being more inclusive of those with interests behind just flood resilience (Lyon, 2015). Furthermore, the Local Flood Management plans, being developed to implement the Scottish Flood Risk Management Act (2009) identify these community resilience groups as a key entry point for community engagement to plan and deliver a range of actions to better manage flood risk locally.

This extends into a 'localities approach' that is currently being developed by the council. This 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 in part 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.

Policy Context: Scottish National Policy

More widely across Scotland reforms in how public services are delivered are being pursued (Commission chaired by Dr Campbell Christie, 2011). Many of the more recent Acts relate in some way to climate change, or the ability to work with climate disadvantage (Figure 1). These emphasise the need for more holistic approaches that seek to work to enhance horizontal connectivity and partnerships across sectors and organisations and which ultimately work with the challenges arising from social and economic inequality.

A good example of this are the flood risk management policies that recognise the need for broad approaches to improve flood resilience. This includes moving beyond a reliance on engineered solutions to 'defend' assets and communities towards the use of landscape level approaches that draw on natural processes to store and slow down water across catchments. Nationally, flood management is overseen by the Scottish Environment Protection Agency (SEPA) with local authorities developing activities at the local level for implementation. Where engineered solutions are deemed necessary at the local level there is a greater focus on developing multiple benefits alongside these measures, all of which are more effective when local people are involved. Formally, flood risk management in Scotland now recognises the role and need for collaboration between a much greater range of stakeholders. Similarly, at a national level a greater emphasis on understanding the socially differentiated impacts from flooding locally has also emerged (Kazmierczak et al., 2015a; Lindley and O'Neill, 2013). Widespread flooding events in recent years has continued to put community resilience higher up on the political agenda.

Reducing fuel poverty is a specific goal of the Scottish Government. Fuel poverty is defined as when there is a need to spend more than 10% of the household income on fuel. National fuel poverty policies identify links with health the condition of homes and climate mitigation action (Scottish Government, 2014b). A number of different initiative have been progressed nationally to help reduce fuel poverty that have included financial support on improving energy efficiency of existing housing and new housing, available for both tenant and owner occupiers. The main target groups in the past have been elderly people and those on benefits, however the effectiveness of much of this action on reducing individual fuel poverty is often not measured (Sustainable Urban Environments Research Group, 2013). Over the life time of this policy fuel poverty has increased as the costs of fuel and efficiency action has increased (Scottish Government, 2014b). Previous government led support programmes have now shifted to action by energy companies who have legal responsibilities (Energy Company Obligations), overseen by the UK government, to identify those with additional energy needs and provide them with support (Britain Thinks, 2013). This may lead to additional levies on domestic energy bills to cover these costs, which may penalise other disadvantaged groups (Joseph Rowntree Foundation, 2011).

The development of renewable energy is actively supported by the Scottish Government, which has set a goal to deliver 100% of electricity from renewable sources by 2020. Alongside a target for 11% of heat and 10% transportation coming from renewable sources the aim is for 30% of the overall share

of energy in Scotland to come from renewable energy sources (Scottish Government, 2011). Through the development of hydro power and more specifically rapid expansion of the wind power sector 49.8% of the energy consumed in Scotland in 2014 came from renewable sources (Scottish Government, 2015). The development and skills and employment opportunities is explicitly linked with this goal, as is providing support to develop benefits for communities alongside commercial activities as well as supporting community ownership initiatives (Close the Gap Partnership, 2015).

Adapting to the adverse impacts from climate change is also recognised as important nationally. This focuses on helping organisations, businesses, and communities to reduce the disruption from climate events such as flooding whilst at the same time identifying opportunities. The aim is to increase the capacity in Scotland for this action to build resilience to direct impacts from a rapidly changing climate, for example skills and knowledge in local authorities to take a strategic, coordinated approach to assess risks and opportunities and take action. Strategically integration across policy sectors is a critical part of this (Scottish Government, 2009). Dimensions identified as important at the national level for adaptation to climate change are: developing synergies with climate mitigation actions; focusing on broader resilience to deliver wider benefits; working in partnership; engaging and empowering communities to take action; avoiding action that exacerbates existing inequalities, for example by recognising that some groups will be more disadvantaged by climate change impacts than others, such as people with poor health or mobility, who lack insurance or with low levels of income (Scottish Government, 2009, 2014a).

At the same time much of the current work on resilience in communities is occurring under conditions of austerity. Cuts to local authorities in England, for example have resulted in a 30% reduction in expenditure between 2010-2015, a cutback estimated to be three times that of the 1970s and 1980s recessions (Platts-Fowler and Robinson, 2016). While some councils have been able to adapt to some degree to austerity through efficiency measures, in most cases public service delivery has undergone or is undergoing significant restructuring (Meegan et al., 2014). This has included reduced involvement in provision of services, greater focus towards those most disadvantaged, and 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). Furthermore the effect of welfare cuts has been to push many into chronic crisis with greater reliance on food banks (Lambie-Mumford, 2013) and payday loans (Rowlingson et al., 2016) with the tendency for people to focus on survival in the present rather than on future challenges (Wright, 2016). Within this context the deliberate development of localism approaches by local authorities, which involves non state actors in the planning and delivering local services, has met with some scepticism as a way to shift technocratic responsibilities away from local (Lowndes and Gardner, 2016).

In many cases, policies at national levels to encourage resilience have had limited effect (Stark and Taylor, 2014). The cases where it has been most successful are where there have been attempts to widen the decentralization of control throughout communities (Stark and Taylor, 2014). In Scotland, there is therefore a growing interest in the potential for enhancing community resilience as part of a wider approach to community development, and not just for work focused more directly on natural hazards. It also involves a focus on empowering communities to shape decisions and collaborative working more broadly (Cairney, 2015). This has led to specific reforms, for example the Community Empowerment Act (2015), which aims to enhance links between different public bodies and communities and give more control to communities to shape decisions and actions.

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 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 take on a much broader perspective emphasising catchment scale and public participation (Spray, 2009).

Community Empowerment Act (2015): The recently enacted Community Empowerment Act (2015) aims to help bring about a shift towards communities having greater influence to shape 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 and shape the actions of public bodies and 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 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 at a national level and locally by public bodies such as local authorities. The main focus is on reducing emissions however the act also sets out the need for action to adapt to climate change as well as a more specific focus on the role of forestry, waste reduction and energy efficiency in climate mitigations. 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 community people more broadly.

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 is defined relating to the impacts a result of 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 particularly 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 continue the essential functions, structures and process at an organisational level and reduce any adverse impact and wider disruption. 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 1: Examples of some of the critical acts that relate to different aspects of climate disadvantage

Summary

Climate change requires considerable work to enhance community resilience. Importantly, community resilience needs to include explicit engagement with climate change and with those currently, or most likely to be, influenced by climate change. In the Scottish Borders, previous work of

the SBC in communities that has focused primarily on community resilience to flooding provided important opportunities and avenues for examining climate disadvantage and community resilience. This has occurred within a complex wider policy context. The following section outlines the methods used in the SBCRC project to elicit information about climate disadvantage and resilience.

Methods

Approach

The SBCRC project focused on working with three communities with a history of flooding in the Scottish Borders and other organisations at the regional and national level. The project was delivered between May 2015 and September 2016 with the project officer being embedded in the SBC to enable more effective communication between project team members and enhance opportunities for engagement with local communities. This enabled the project to work with and strengthen existing engagement pathways with community groups. Working with community groups, council staff and other organisations at the local, regional and national level enabled the project develop locally appropriate collaborative action and explore how policy may help facilitate local action to improve community resilience in the future.

The project team included staff from the University of Dundee, SBC staff with a remit in emergency planning, climate change and economic development, land use and ecology, flood risk management and the senior policy advisor (table 2). Also included in the project team were representatives from two local NGO's (Tweed Forum and Southern Uplands partnership). To help bring together the different perspectives and knowledge in the SBC project team regular project meetings were organised. Initially these discussions focused on logistics, identifying potentially useful outcomes for the council and identifying existing community engagement routes, additional opportunities and discussing challenges. As the project progresses it was not always practical for the SBC project team to formally meet. Thus, there was a greater emphasis on informal knowledge exchange with individual SBC teams and project team members.

Team member	Contribution to project	Identified interest in project *
University of Dundee Professor of Social Dimension of Environmental Change	Principle Investigator/ Core team member <ul style="list-style-type: none"> Lead, oversee and manage project process and reporting Workshop design and facilitation 	<ul style="list-style-type: none"> Community resilience to climate change science, policy and practice Systems science Action research practice
SBCRC Project Officer	Day to day project coordination/ Core team member <ul style="list-style-type: none"> Stakeholder engagement (community and organisations) Knowledge brokering Support stakeholders to shape outcomes from project 	<ul style="list-style-type: none"> Community engagement Collaborative practice
University of Dundee PhD student (Learning and Resilience)	Project Evaluator/ Core team member <ul style="list-style-type: none"> Evaluation data collection, analysis and communication 	<ul style="list-style-type: none"> Joined-up learning tools and processes to improve community resilience
SBC Senior Policy Advisor	Core team member <ul style="list-style-type: none"> Share knowledge 	<ul style="list-style-type: none"> Strategic planning for community development and engagement

	<ul style="list-style-type: none"> Contribute to project meetings and workshops 	
SBC Climate Change and Economic Development Team Environmental Strategy Coordinator	Core team member <ul style="list-style-type: none"> Key SBC contact for SBCRC project officer Share knowledge Contribute to project meetings and workshops 	<ul style="list-style-type: none"> Low carbon economy initiatives
SBC Emergency Planning Officer	Core team member <ul style="list-style-type: none"> Initial logistical support for SBCRC project officer Share knowledge Contribute to project meetings and workshops 	<ul style="list-style-type: none"> Community engagement to prepare and respond to extreme weather (SBC Community resilience initiative) Improving emergency support for vulnerable people
SBC Flood and Coastal Management team leader	Team member <ul style="list-style-type: none"> Share knowledge Contribute to project meetings and workshops Provide desk space for project officer 	<ul style="list-style-type: none"> Improving flood risk management
SBC Flood and Coastal Management Officer	Team member <ul style="list-style-type: none"> Share knowledge Contribute to project meetings and workshops 	<ul style="list-style-type: none"> Improving flood risk management
SBC Ecology and Land Use Officer	Team member <ul style="list-style-type: none"> Share knowledge Contribute to project meetings and workshops 	<ul style="list-style-type: none"> Natural flood management Tools for engaging local stakeholders in natural flood management
Southern Uplands Partnership (NGO) Project Manager	Team member <ul style="list-style-type: none"> Share knowledge Contribute to project meetings and workshops 	<ul style="list-style-type: none"> Community development across Southern Scotland
Tweed Forum Senior Project Officer	Team member <ul style="list-style-type: none"> Share knowledge Contribute to project meetings and workshops 	<ul style="list-style-type: none"> Integrated Land and Water Management in Tweed catchment (Peebles and Hawick communities) Linking urban and rural
International Futures Forum and Director of Decision Integrity Ltd	Team member <ul style="list-style-type: none"> Workshop design and facilitation 	<ul style="list-style-type: none"> Foresight and systems science

* Interests in project identified through a series of meeting between project officer and team members

Table 2: The SBCRC project team members, role in project and identified interest

The communities included in the project were selected by SBC project team members. The experiences of flooding in the communities was used as an entry point to examine the complex wider context and factors shaping climate disadvantage and community resilience, which then enabled a more inclusive and integrated examination of the policy context to occur.

The project involved community based workshops, extensive engagement and other activities. Other activities, such as project planning and advisory board meetings and a reflection workshop with the project team were also conducted. The findings were then brought together to explore how policy and practice may better shape action to improve community resilience going forward, with a particular emphasis on climate disadvantage. In this sense, the findings outlined in this report were derived from

participatory and action research methods, where action was the primary goal but where the action then provided important opportunities for the elicitation of information and knowledge that was collected through rigorous data collection and analytical methods.

The action oriented process

The information presented in this report was elicited as the engagement process. This process was structured around 10 workshops interspersed with other activities (Figure 2), with full details of the process provided in the sister report.

Three workshops were conducted in each of three communities (nine in total) with a tenth workshop using the outcomes of the work in communities to examine issues relating to national level policies. The three communities are geographically dispersed across the Scottish Borders. They included: a commuter community situated 23 miles from Edinburgh and with a population of around 8,000 people (Peebles); one of the largest communities in the Scottish Borders, situated south of the central belt along which many of the larger communities are clustered experiencing issues linked to urban regeneration (Hawick) and; an isolated rural community of around 8,00 people, situated a few miles from the Scottish/ English border in the farthest south corner of the Scottish Borders area and experiencing issues linked with rural development (Newcastleton). Communities were selected because they are all vulnerable to the impacts of climate change shocks (flooding) and to provide diverse contexts to draw out the impacts of longer term stresses.

Engagement of community members and organisations was initially informed by the knowledge and relationships of the project team following which a snowballing engagement strategy was used. For example, those initially participating in workshops were then encouraged to bring in others, with the result being a greater number of community and organisational people joining in as the project progressed. The result was 284 individuals and organisational representatives participating in the project, including the 238 different people that participated in workshops (see acknowledgments for the different organisations involved).

The local community workshops brought together community members, 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 more widely. The community workshops were tailored to particular needs of the different communities involved. Workshop 1 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.

Workshop 2 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 different communities. This approach involves facilitated dialogue to help map out potential transitions from one pattern (e.g. less resilient community) to another (e.g. to being a more resilient community).

Workshop 3 depended on the outcomes of the first two workshops in each community. Essentially, however, it provided a facilitated space for engagement of community members with different organisations. The focus varied between communities.

Between the workshops the project officer worked to enhance engagement and interaction depending on the needs of different communities and to collect appropriate data to improve understanding about community resilience. Examples of such activities include: supporting community led research teams and facilitating collaboration between different groups involved in the process. As part of the continued engagement process emerging information was continually shared

with participants. This included the production of a report after each of the nine community based workshops. These are available at: <http://www.dundee.ac.uk/cechr/projects/sbcrc/>.

The final workshop took the results and overall findings of the community based work to examine policy and linkages at national scales needed to facilitate community based actions. This involved 24 participants from national level non-government organisations (12), Scottish Government (5), local authorities (3), research organisations (3) and community networking organisations (1) and had with expertise relating to equality, community development, climate change, flooding, emergency planning, rural development and environmental management. The workshop used a combination of systems mapping and diagramming with the

Community workshops were conducted in evenings to enable diverse participants to attend and typically lasted between 2½-3½ hours. All workshops were designed and professionally facilitated by Ioan Fazey (University of Dundee), Anthony Hodgson (International Futures Forum), and Kevin Murray (Kevin Murray Associates).

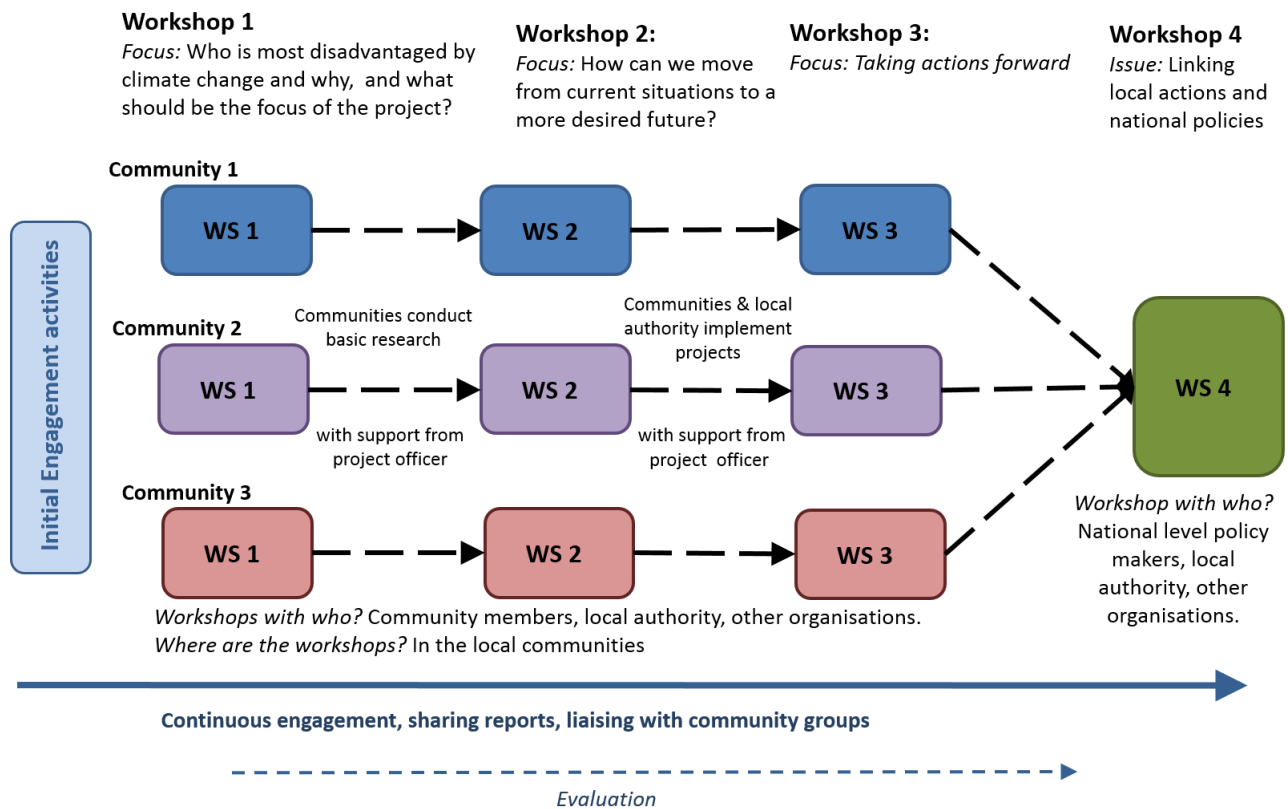


Figure 2: An overview of the project process

Data Collection

The action oriented process provided opportunities to elicit knowledge and information. Multiple methods of data collection included:

Workshops: The workshops were designed not only to encourage dialogue but also to collect views, opinions and relevant information. Information emerging from the workshops was compiled and collated as a report (see: <http://www.dundee.ac.uk/cechr/projects/sbcrc/>). This then provided data for further analysis.

Ethnographic research notes: A research diary provided a written account of the process. This included a focus on developing contextual accounts relating to each 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, for example a meeting, workshop or when faced with a potential obstacle. Reflective discussions with other members of the project team and with key community members were particularly helpful to identify key factors shaping existing actions and how the process was unfolding, for example within the project team, within the SBC and with community members. These research notes also included ideas on how to improve specific types of activities, for example communication relating to message framing and the type of language to use. This aspect of data collection was also enhanced by community led data collection in Peebles and an SBC post flood survey.

Interviews: Semi-structured interviews were conducted over the course of the project to understand both 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. Interviews were conducted with participants after each of the workshops. Interviews lasted between 20-30 minutes and were either conducted face to face or by phone. Where possible, interviews at different stages of the project were conducted with the same participants from earlier stages. Overall, 52 interviews were conducted. This included 22 interviews with the project team (9 different individuals with 4 of these involved in repeat interviews), 14 interviews with residents (9 different individuals, with 7 of these involved in repeat interviews), and 16 interviews with individuals from additional organisations (9 different individuals with 3 of these involved in repeat interviews). Different interview schedules were developed which reflected the aims of the workshops as well activities in between, such as the community development exercises and flood events. Overall, while the interviews primarily focused on understanding project delivery, they provided important sources of triangulation with other forms of data to validate different findings emerging from the project.

Data analysis

In general, 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 informs the next cycle of data analysis and pattern identification (Strauss and Corbin, 1998). The 'bottom-up' approach enabled the emergence of ideas in a way that is not constrained by pre-set questions and took into account the emergence of new questions as the project unfolded. The approach thus complemented the wider flexible approach taken to the delivery of the action oriented aspects of the project.

Conceptually, information collected about who was considered to be disadvantaged (Question 1) was used to help inform the development of understanding of the dynamics of disadvantage operating at community levels (Question 2). This was then explored in relation to the wider national policy context 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 3).

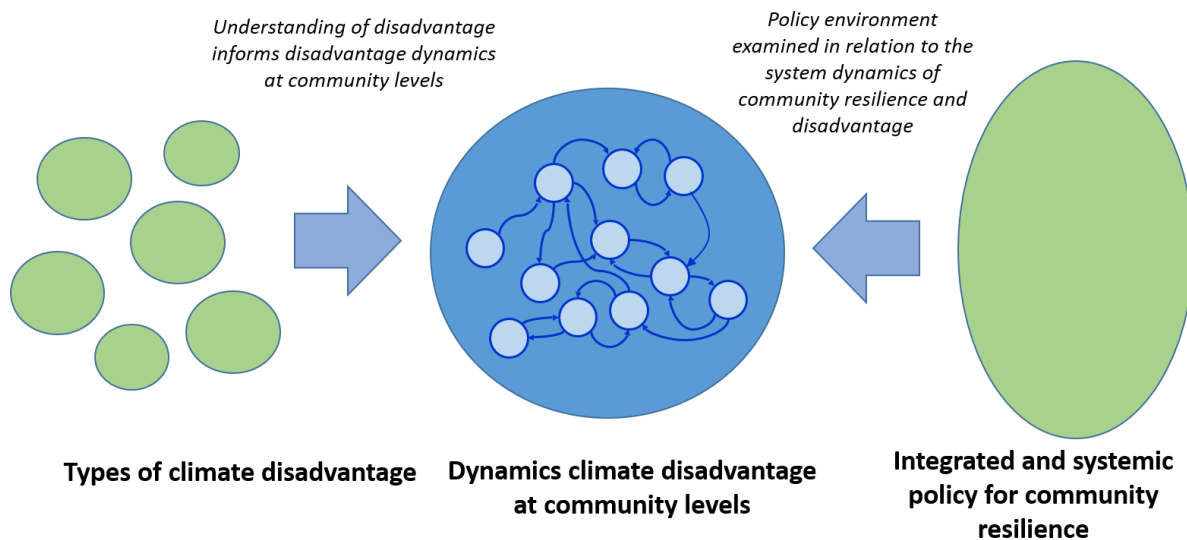


Figure 3. Inter-relationships of knowledge from different scales. The primary focus is on community resilience, which is informed by different types of disadvantage at lower social scales. The enabling conditions needed at higher social scales were then explored.

For the first question much of the data was elicited from the first workshops in the three communities and through the collection of insights from the project officer. The analytical process involved the grouping of segments of text into themes and sub themes and identifying links between these. For understanding who was considered disadvantaged and why, data from workshops was coded and collated as an extensive spreadsheet to identify linkages between statements about the nature and causes of disadvantage. This then enabled identification of key patterns and groupings. From this a number of climate disadvantaged groups were identified across the communities.

To understand the dynamics of community resilience, data from the workshops and ethnographic notes were examined to identify key statements about how different groups and people were considered to be disadvantaged and why this disadvantage was thought to occur. 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 further explored in the policy workshop. A more comprehensive community resilience systems diagram was then produced based on comments from this workshop, with triangulation with the original data, ethnographic notes and interviews.

To identify key areas for national policy to better support community resilience to climate ideas identified in the final workshop were clustered and links between clusters identified applying Hexagon thinking methodology. Full details of the methodology can be found at: http://www.h3uni.org/resource_library/index.php?title=Hexagon_Thinking_Tutorial. Overall, the workshop provided new insights about the integrated nature of issues relating to resilience.

Research Ethics

Ethical permission for the research was provided by the University of Dundee. The project generally adhered to usual ethical guidelines of informed consent, confidentiality and, where possible, anonymity. The latter aspect was difficult to achieve in some circumstances as much of the discussions were held in public fora. There was also some potential conflict of interest between the project leader

who played a dual role of researcher and facilitator and the project officer who conducted much of the community engagement and drove action while also collecting and analysing the data emerging from the project. All interviews, however, were conducted by a separate project member from the University who was able to provide a considerable degree of independence. Details of who had been interviewed were, for example, not made available to the project lead and project officer and data was anonymised.

Results

The results present key findings in relation to each of the three questions. First, we explain the key groups considered to be disadvantaged in relation to climate change in the communities. Second, we outline key dynamics of community resilience in relation to disadvantage and climate change operating at the level of communities. Finally, we report on how consideration of policy needs operating at national scales, including what is needed to generate a more comprehensive policy approach to community resilience.

Who is disadvantaged by climate change and why?

One of the main focuses in the first part of the project involved facilitating conversations involving community members, the council and other relevant organisations to explore which groups in communities may be more disadvantaged than others to the local impacts linked to climate change. From these discussions within the three communities six key groups were identified as being particularly disadvantaged by climate change. These are outlined below (Table 3).

Elderly and people with existing health issues	People with low incomes	Local Businesses	Tenants	Essential infrastructure users	Families with young children
<ul style="list-style-type: none"> Limited ability to prepare, respond and recover from flooding Reduced accessibility - Unable to clear snow on paths Damage to homes (flooding) Disruption to lives - need for alternative accommodation Reduced accessibility into/ from house Reduced accessibility around community Reduced accessibility for care providers Reduce accessibility for health services Reduced availability of food (supermarket deliveries) Exacerbate existing health problems New health problems Mental health/anxiety and stress (flood evacuation) Mental health/anxiety and stress (fear of future flooding) Mental health/anxiety and stress (insurance costs) Mental health/ anxiety and stress (loss of sentimental possessions) Mental health/ anxiety and stress (relocation to another community) 	<ul style="list-style-type: none"> Cost of flood preparation measures (e.g blocking air vents, flood gates) Nearby derelict buildings (increased flood risk) Level of insurance premiums Cost of flood damage Reduced access to place of employment Greater recovery time (after flooding) Increased energy costs (drying out homes) Mental health/ anxiety and stress (insurance costs) Mental health/ anxiety and stress (recovering from flooding) Physical health (from damp) Increased energy need in extreme cold weather Physical health (from cold) Cost of energy (for home) Cost of upgrade for energy efficiency/ maintenance Higher cost of energy efficient technologies (in historic conservation areas) Increased cost to run a private vehicle Increased cost of food Increased cost of water Difficulties managing household budget (e.g volatile price of oil) Increase use of cheaper energy (e.g coal and peat) 	<ul style="list-style-type: none"> Increased risk of flooding from river (fluvial) Increased risk of flooding from the commercial forest land (pluvial) Access to flood response equipment (e.g sand bags) Limited knowledge to prepare, respond and recover from flooding (new businesses) Level of flood insurance premiums Cost of flood damage Loss of trade (closure due to flood damage) Loss of stock (e.g in stored in cellars) Damage to farm crops and livestock Loss of customers (reduced access for community based customers) Loss of rental income Loss of customers (reduced access for visitors to community) Disruption to supply chain (poor accessibility) Damage to tourism infrastructure (countryside recreation e.g fishing, biking) Decreased tourism (perceptions relating to flood impact) 	<ul style="list-style-type: none"> Damage to home from flooding Limited power/ rights to take action (flooding) Limited power/ rights to take action (upgrade energy efficiency) Limited power/ rights to change condition of home Cost of flood recovery Availability of insurance Cost of upgrade for energy efficiency/ maintenance (for landlords) Greater recovery time frame (slower action by landlord after flooding) Increased cost of energy for the home Mental health/ anxiety and stress (relocation) Physical health (cold and damp) Limited ability to take action (lack of local knowledge and support) 	<ul style="list-style-type: none"> Loss of electricity supply (power outage) Physical health (bacterial contamination) Reduced accessibility (around community) Reduced accessibility (into and out of community) Reduced accessibility into/ from house Damage to vehicles (flood) Increase travel time (private transport) Increase travel time (public transport) Reduced accessibility (e.g blocked/ dangerous roads and bridges) Reduced accessibility to private transport (unable to get to car) Disruption to provision of services and supply of goods Damage to electric charging point from flooding Damage to socio-cultural infrastructure (e.g rugby pitch in Hawick) Increased cost of public transport Increased cost of private vehicle use (e.g fuel) Limited availability of public transport Reduce accessibility for health services Reduced ability to get to work 	<ul style="list-style-type: none"> Damage to homes (flooding) Reduced accessibility into/ from house Need for home working/ decrease in work days (closure of schools) Reduced accessibility to child care Greater recovery timeframe (flooding) Reduced ability to access essential services (health, education, care) Cost of repairing flood damage Cost of food (more mouths to feed and different eating habits) Cost of energy (for home) Cost of water Mental health/ anxiety and stress Physical health (young children - respiratory conditions) Quality and quantity of food Health (nutritional needs) Attention span and learning (diet and nutrition)

<ul style="list-style-type: none"> • Mental health/ anxiety and stress (trapped in house) • Mental health/ anxiety and stress (recovering from flooding) • Mental health/ anxiety and stress (lack of information in extreme weather) • Bacterial health issues (water) • Physical health (damp and risk of respiratory conditions) • Physical health (diet and nutrition) • Physical health (lack of water for those with higher need) • Increased cost of food • Increased cost of energy (for home) • Increased cost of water • Cost of energy (higher energy needs to keep warm) 	<ul style="list-style-type: none"> • Lack of ability to bulk buy (e.g fuel such as oil and wood) • Decrease in market value of property (negative equity) • Decrease in market value of property (unable to sell) • Reduced availability of food (supermarket deliveries) • Increased reliance on convenience food 	<ul style="list-style-type: none"> • Loss of electricity supply (power outage) • Increased energy costs (heating/ cooling/ lighting) • Increased transport costs (to supply goods and services) • Increased cost of water • Increased cost of vehicle fuel • Increased cost of water for livestock and crops • Increased cost to shelter livestock • Increased maintenance of buildings (e.g cold and damp buildings/ housing stock) • Cost of upgrade for energy efficiency/ maintenance • Pressure on resources to repair flood damage • Pressure of resources to provide alternative accommodation • Reduced customers (increased use of supermarket deliveries/ internet shopping) • Long term loss of land (e.g gravel deposits on land and erosion) • Small businesses unable to secure local contracts (e.g for energy efficient upgrades) • Limited alternatives for rural livelihood diversification 		<ul style="list-style-type: none"> • Reduced ability to access essential services (e.g health, education, care) and goods (e.g supermarket deliveries) • Abandoned renewable energy technology (poor design) 	
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Table 3: who is disadvantaged to climate change and why

Elderly and people with existing health issues

The first group within communities identified as particularly disadvantaged to climate change is elderly people and those with existing health issues. This group was identified across all three communities, with issues for the elderly particularly highlighted in Peebles. A number of direct and indirect impacts from disruptive climate events on elderly people and people with existing health issues were identified.

Four key reasons why were identified that makes elderly people and people with existing health issues more climate disadvantaged than others. First, they had limited ability to deal with extreme weather that affected the locality in which they lived, such as in relation to flooding, snow or ice around the home for those that were less steady on their feet or had reduced physical strength. This applied in particular to those living on their own or in ground floor accommodation. Reduced ability to leave was perceived to lead to difficulty in accessing essential services and increased a sense of isolation, stress and anxiety.

Second, and in particular for the elderly, they were disadvantaged by a perceived sense of fear of future threats, especially if their strength or mobility was limited or they were physically or socially isolated. This may be similar to the fear of crime where the fear itself, rather than actual experience of crime, can directly contribute to reduced mental, physical wellbeing and quality of life.

Third, this group were particularly disadvantaged by flood water entering the home. It was suggested that the elderly often have many more sentimental possessions, and thus flood damage can be especially distressing. During severe floods, the elderly and those with existing health issues may also find evacuation particularly stressful as it reduces their sense of being in control. Limited physical and/or financial capacity to repair structural damage can also lead to higher levels of moisture in the home, with consequent implications (e.g. respiratory problems) for those less able to fight off physical health threats.

Finally, this group appear to be facing less direct and visible challenges connected to climate change. For example, this group often has higher energy needs (e.g. to heat their homes) and, in combination with limited financial resources, they may be particularly affected by changes within the wider energy system associated with climate change. Other essential needs include water and food and these can also be influenced by climate change. Increases in cost of food or limited local supply can influence nutritional intake and this can contribute to health issues. The increasing challenge of coping with these longer term stresses was suggested to be putting some individuals towards critical thresholds where they would be much less resilient to immediate shocks (e.g. less able to prepare for or recover from floods).

The factors shaping whether elderly people and those with existing health issues are disadvantaged by climate change involve limited physical and mental wellbeing interacting with direct and indirect impacts from climate change that can make daily life more difficult. This involves visible, immediate impacts from extreme weather but also less visible, slower changing, less direct impacts that can shape access to and need for essential aspects of life, such as food, energy and water

People with low income

The second group within communities identified as particularly disadvantaged to climate change are those with low incomes. This involved people temporarily out of work, recently unemployed or the long term unemployed struggling to find work. Young people in Peebles and people recently unemployed by factory closures in Hawick were specific examples. This group are, in the UK, often 'on the frontline' of measures related to austerity and a retraction in some social support systems (Bailey

et al., 2015). The more affordable housing in which they live is also often lower quality and situated in areas particularly exposed to the impacts from extreme weather.

This group can have limited financial resources to take action to prepare, respond and fully recover from extreme weather, with cost of household flood prevention measures and high flood insurance premiums being particular challenges. More affordable housing is also more likely to be sited in near derelict buildings which can have increase the flood risk of nearby properties. People in this group may also be time poor and reliant on regular income to provide essential household items. Moisture and damp that can build up in a home from residual flood water and prolonged low ambient temperatures was also suggested to be affecting physical health for many people in this group. Extreme weather can also influence the costs of transport or access to limited work opportunities. This is a particularly acute challenge for people with low income living in small, rural communities with limited employment opportunities and essential services. Incidents of flooding also can influence the value of houses on the market, leading to negative equity. The realities of a relatively small household budget is also linked to a number of less visible, slower changing factors related to climate change such as food, water and energy prices. These changes require some difficult decisions to prioritise some needs over others, such as reducing the quantity or quality of food, moving to cheaper local energy sources such as peat or coal or using less energy to heat the home. During severe cold weather the lack of resources to pay for energy, particularly those on high tariff pre-paid meters and the financial input necessary to install household energy efficiency measures further contributes to the likelihood of people in this group being particularly disadvantaged by climate change. While bulk buying is one strategy to help reduce cost, this strategy is not often available to those with limited income.

In summary, there are a number of interrelated reasons that may contribute to people with low incomes being climate disadvantaged. This includes potentially more severe and longer lasting consequences from extreme weather linked to a lack of financial resources. Other less visible climate related challenges may also add further pressure to household budgets and reduce the capacity of this group to adequately meet basic needs, for example between basic needs such as food, energy and maintaining a home. This is often simply described as a 'heat or eat dilemma' (Beatty et al., 2014). However, decision making processes are complex and context specific. Thus, the actual experience and specific combinations of challenges and consequences on people with low income will vary, with some aspects being more hidden than others. However, in combination these visible and hidden challenges may reduce the capacity to consistently participate in society more broadly, such as in climate mitigation or economic activities.

Local businesses

Local businesses included farmers in rural areas, small and medium enterprises within communities, social and private landlords and community social enterprises providing important social and sporting facilities. These businesses are an important part of communities, helping to provide accessible employment, spaces that bring people together, goods and services and contribute to a diverse and strong local economy. A number of direct and indirect impacts from disruptive climate events on local businesses were identified.

A number of direct and indirect impacts from climate change were identified for local business that may make them particularly climate disadvantaged. Local business in rural areas may experience impacts on livestock, land quality and quantity, all of which are core foundations of farm livelihoods. This related to the need to provide shelter to livestock in extreme weather, the need for enough water for livestock and crops and the damage to land and crops from flooding.

Second, also identified was flood damage to commercial buildings, equipment and stored stock, particular if stored in cellars. This flood damage leads to additional costs, particular with high insurance premiums for commercial and community buildings that have been flooded in the past.

Local businesses may have to temporarily stop trading to repair flood damage which can be take time. This recovery time is influenced by the type and level of action undertaken and availability of flood prevention measures, for example sandbags. It is also influenced by owners' depth of understanding of how to undertake appropriate action. Experience of past flooding events helps build this understanding. New businesses that had owners with limited local knowledge were highlighted as being particularly disadvantaged. Extreme weather blocking access and reducing "footfall" of customers or damaged to transport infrastructure can disrupt movement of stock and deter visitors.

Third, landlords were identified as a type of local business particularly disadvantaged by climate change. This particularly related to private landlords with limited financial resources or with limited awareness about the type, level and urgency of action to restore properties. Although identified across the communities, in Hawick the consequences of climate change on the rental market was identified as a particular concern by community members where supply was greater than demand. Pressures, for example from the loss of rental income, may in some cases lead to landlords not undertaking the required action to fully restore property with elevated levels of moisture over time leading to further deterioration and increasing maintenance costs.

The issues of dealing with more immediate shocks was also exacerbated by challenges linked to longer term stresses, particularly linked to energy supply and use. For example, meeting energy costs for refrigeration or lighting, the cost of upgrading the energy efficiency of buildings, especially for landlords and, particularly for farmers, increasing costs associated with transport. Furthermore, higher transport and food costs can influence the shopping habits of people, which may be provide an additional challenge to local businesses, particular in rural areas. In addition, local trade people may be less able to secure contracts to improve building energy efficiency due to regulations and requirements that favour larger contractors that often come from outside local communities. Start up or small companies may therefore be disproportionately affected by climate change.

There are a number of visible and more hidden climate related factors that contribute to local businesses being particularly climate disadvantaged. This relates to impacts on businesses ability to trade in the short and longer term, support local livelihoods and continue to provide important goods, services and facilities within communities. Increasing costs was identified as a particular issue for some local businesses particularly with limited financial resources and this in combination limited local knowledge may be particular problematic for new 'start-up' local business.

Tenants

The fourth group within communities identified as particular disadvantaged to climate change are tenants, particularly those renting privately. This was a particular important group identified for Hawick, which has a high number of small rental properties. A critical factor identified is the lack of power tenants have to alter aspects of their homes to improve resilience. This relates to action to prepare for and fully recover from flooding and improve the energy efficiency of a home to reduce the energy use and thus cost. Household level action to mitigate and adapt to climate change for tenants renting privately is also influenced by the awareness of the issues, motivations and financial resources of landlords. Tenants with landlords not living in the community may struggle more than most to improve the resilience to climate change of their home. The rental sector also includes people with limited financial resources which can also reduce the level and type of household level resilience actions. Furthermore, the rental sector includes people who may be quite transient, moving within a community or between communities which may reduce the local knowledge and understanding about the level and types of actions that may reduce the consequences of shocks like flooding. If relocation is not a choice, for example in response to flood damage, this can lead to stress and anxiety for people within the rental sector. Furthermore, transient people are less likely to contribute to, and be supported by, wider community action to improve community resilience.

In summary, tenant's lack of power/rights to take action to improve household level resilience to climate change was identified as an important factor making them particularly climate disadvantaged, and this was also influenced by the behaviour of landlords. If tenants also move locations this reduced their knowledge and likelihood of contributing to wider community resilience activities.

Essential infrastructure users

The fifth group identified as a key group within communities who are disadvantaged by climate change is essential infrastructure users. This includes people reliant on mains energy sources and particularly those reliant on public or private transport infrastructure. Extreme weather, including landslides, can damage vehicles and transport infrastructure, such as roads and bridges, and power supply infrastructure, such as overhead electricity cables. Water supplies can also become disrupted, for example contamination by flood water. Reduced accessibility can be particularly problematic for essential service users, for example to access care, education and health services and places of employment. For local businesses dealing with perishable goods, damage to power supply infrastructure can lead to a loss of stock and real or perceived damage to infrastructure can lead to a reduced trade for local businesses. Damage to roads and bridges can be particularly challenging in rural areas where there are often few easy alternative access routes and a high reliance on public transport infrastructure. Furthermore, the time taken to clear transport routes from snow and ice may be longer in small, rural communities where local authority road maintenance and clearance service provision is structured around more populated centres. In the longer term increasing costs of public and private transport may be an additional challenge for essential transport users linked with climate change.

In summary, extreme weather can damage infrastructure that is an essential part of people's daily lives to access goods, services and maintain livelihoods. Damage to infrastructure can be short term or longer term with severe structural impacts from extreme weather. The longer the disruption the more widespread the consequences may be felt across the community. People in rural communities are likely to be particularly climate disadvantaged with limited public and a strong reliance on private transport to access goods and services and engage in activities out with communities.

Families with young children

The final group identified in communities as particularly disadvantaged by climate change is families. Specifically this focuses on families with young children. Single parents and those with limited financial resources and wider family support were additional dimension that further contributed to this group being particularly disadvantaged by climate change. For families extreme weather can be particularly problematic by reducing connections to wider community goods and services. For example to access formal or informal childcare for working parents and/ or the ability of older children to access educational facilities. In rural communities access to secondary school facilities in extreme weather was identified as a particular challenge. Those families with no or limited income and time due to other responsibilities may struggle more than other groups to repair and restore the condition of the home after flooding, with potential longer term impacts on health (such as respiratory conditions). This issue may be exacerbated by the need to reduce ambient temperature in response to rising energy costs. Changes in food systems can also increase the pressures on family life. Family households often have more people to feed, sometimes with different eating preferences and needs. Increasing costs of food can lead to changes in the quality and quantity of food for families and in the longer term this can influence the nutritional intake of people in the family. Children have specific nutritional needs and prolonged periods below this threshold can influence their attention levels and abilities to learn.

In summary, families may be particularly disadvantaged by climate change in visible ways, for example reducing access to essential goods and services and ability to continue daily life. Family life can also

be hindered by changes in food and energy systems that are indirectly influenced by climate change. Increases in the cost and availability of food and energy can be particularly challenging for families with young children with specific nutritional needs.

Implications

The results on types of disadvantage have 11 key implications:

Implication 1: Even though many people in communities can be potentially vulnerable to shocks and stresses associated with climate change, different groups are affected in different ways. One size fits all approaches to community resilience are therefore not likely to be effective.

Implication 2: Much of the discussions were focused around the impacts of extreme weather rather than on the less immediate impacts of climate change. This is not in itself surprising as longer term impacts are less certain, are often outside of common experience, and are much less visible.

Implication 3: Despite this level of attention to immediate shocks, the effect of these issues is also perceived to be strongly influenced by complex longer term stresses. This may be beginning to push certain groups (e.g. elderly, existing health conditions, low income, some families) towards critical thresholds, thereby reducing their resilience.

Implication 4: These thresholds related closely to financial resources, which was identified as being critical for all of the main groups identified. Impacts on finances affects abilities to take action to prepare and recover from extreme weather, to meet longer term basic needs, and to engage in activities aimed at improving community resilience more widely.

Implication 5: Condition of the home was a critical aspect of many discussions. The longer term impacts of shocks (especially flooding) was perceived to significantly contribute to longer term stress and health as a result of poor condition of homes. Dealing with these stresses was made more challenging by impacts emerging through changing economic conditions and are likely to be exacerbated by longer term stresses associated with climate change.

Implication 6: For those already more vulnerable due to ill health, limited physical capacity, or who are socially excluded, the potential stress of the fear of extreme events is a genuine issue that is likely to be reducing quality of life.

Implication 7: There was considerable emphasis on the need for community resilience initiatives to support local businesses as they provide important goods and services within communities, employment opportunities, housing, spaces to connect with other people in the community and make a valuable contribution to the local economy and wellbeing of community members. Access to goods, services and employment is linked with the ability of other groups within the community to survive and thrive, for example people with health issues, with low income and families.

Implication 8: The actions to maintain and improve access to local business and community facilities is an important consideration for community resilience. A key area for consideration is to ensure that new local businesses gain support to build their resilience to climate change in the longer term.

Implication 9: Enhancing issues of power relations was important in some groups. For example, for tenants, support is needed to enable them to be more empowered to take action and to engage more widely in decisions and actions towards improving community resilience to climate change.

Implication 10: The issues facing critical infrastructure users highlights the need for coordinated and joined up actions not only between service providers but also in ways that involve community members will be critical in helping to reduce the combined negative consequences of climate change.

Implication 11: Finally, some individuals may find they are part of more than one of the groups. It is, for example, possible that someone may be part of a family with young children, a critical infrastructure user, and a tenant on low income trying to run their own business. Those within multiple

groups will be highly vulnerable and disadvantaged by climate change. This highlights that a critical part of identifying disadvantage may be to focus on where people fit within multiple groupings. More detailed surveys and other data that reflect these synergies would be one way to build on the information presented on this report. Importantly, it also highlights the need to consider how the different aspects of climate disadvantage interact at the level of community. This is reported on in the next section.

What were the key dynamics of climate disadvantage at a community level?

Understanding community resilience requires examining the complex relationships and dynamics between different component parts of a community. This section therefore builds on the previous section to explain more generic level dynamics at the level of a community, rather than focusing on individuals, groups or households. It presents the findings of how participants in communities perceived the relationship between different issues in communities. The dynamics show the relationships between impacts, community level consequences, actions, groups within communities and external organisations. Exploring these dynamics is useful to identify how community focused actions and initiatives may help or hinder community resilience. Specifically, these dynamics can help identify leverage points at the community level to direct resources to deliver multiple benefits across sectors and through time.

To understand the dynamics, data from the workshops, interviews and ethnographic notes was examined to identify key statements about how different groups and people were considered to be disadvantaged and why this disadvantage was thought to occur. This approach built on previous participatory methods used to identify complex system dynamics (Fazey, 2011; Fazey et al., 2006). Causal links were then identified which enabled the development of preliminary resilience dynamics through the lens of climate disadvantage, which were further explored in the policy workshop (phase 4). A more comprehensive community resilience systems diagram was then produced based on comments from this workshop and further triangulation with the original data.

The dynamics are presented as causal loop diagrams (Sterman, 2000). In these diagrams arrows represent influences between different components of a system (in this case the system being a community). The direction of an arrow highlights that a change in one component has an influence on a change in another. The polarity on the arrow head explains the nature of the change. A positive polarity indicates that the change will be in the same direction as the initial changing variable (i.e. an increase/decrease in one component will result in the increase/decrease in another). A negative polarity indicates that the change will be in the opposite direction (i.e. an increase/decrease in one component will result in a decrease/increase in the other). This then allows the identification of feedback loops, which are either reinforcing (R) or balancing (B) (Sterman, 2000).

Sustaining daily existence, stress, health, fear, capacity and damage

The first set of community resilience dynamics relate to the need to sustain daily existence and ensure basic human needs, such as shelter, food and energy, are met and how they interact with increasing severity and/or frequency of climate related events and stress and anxiety (figure 4). In **'Sustaining daily existence'** (R1), rising costs of food, energy and water, combined with other socio-economic changing conditions decreases the ability of households to balance budgets. This then forces difficult choices for households, such as how much to spend on repairing the structure or contents of a home versus energy use or the quality and/ or quantity of food purchased. This limits the ability to maintain the home, resulting in lower condition and, over the long term further reducing the ability to manage budgets. This issue is exacerbated by loops **'Stress & Health'** (R2) and **'Fear & Stress'** (R3). Increased stress from inability to manage budgets can result in reductions in physical and mental health (especially for those with existing conditions or the elderly). Lower physical or mental health further reduces ability to maintain homes, eventually leading to further difficulties in managing budgets (R2). As health problems increase, the likelihood of social isolation increases and, combined with health related limitations, fear of extreme events can increase, further exacerbating stress and anxiety (R3). These feedbacks are also closely relate to **'Capacity & Damage'** (R4 and R5) where decreased ability

to maintain homes in communities can reduce capacities to prepare for, respond to, and recover from extreme events which, when combined with increasing frequency and severity of extreme weather events results in greater damage to homes. Even with flood insurance, additional financial resources are needed to take action and repair the damage to restore the condition of the home to a good standard. Eventually further increasing challenges of managing budgets (R4). Limited physical and mental abilities of some individuals also generally result in lower capacity within communities to prepare for, respond to, and recover from crises (R5).

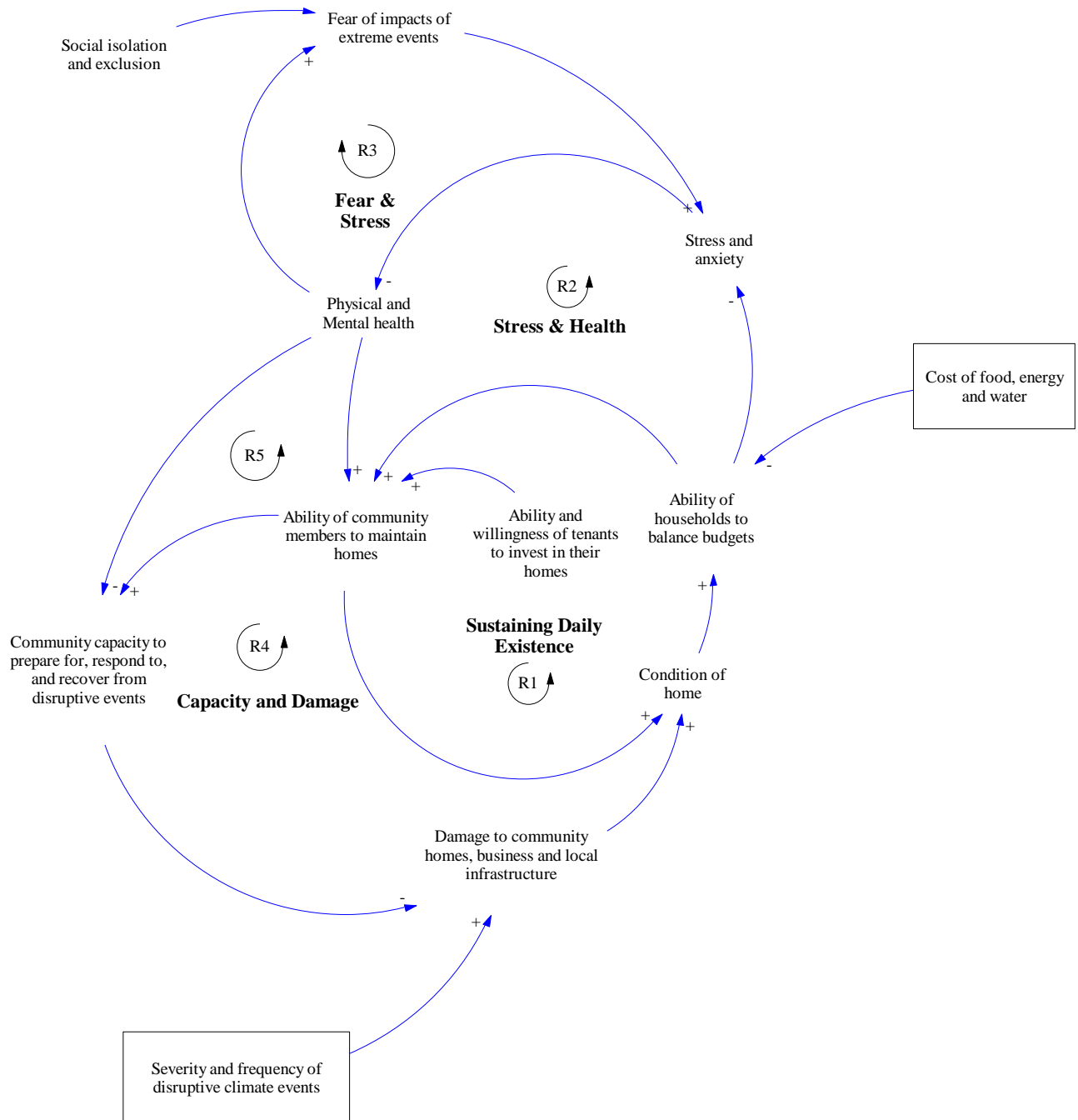


Figure 4. Sustaining daily existence, stress, health, fear, capacity and damage systems diagram

Sustaining investment and infrastructure disruption

Businesses are a critical component of communities. With increasing frequency and severity of extreme weather, damage and disruption to businesses is more likely. There are two reinforcing loops relating to **'Sustaining Investment'** (R6 and R7) (Figure 5). The first loop (R6) relates to the ability of businesses to quickly resume partial activities after a disruptive climate event, such as through greater preparedness (e.g. ensuring stock is not located on the ground floor susceptible to flooding). This helps accelerate full recovery as it enables a degree of continued operation of activities. The second reinforcing loop (R7) focuses on the ability to fully recover following a disruptive climate event such as flooding. Fully recovering enables activities and routines to resume, e.g. ensuring functioning business premises that allow maximising of trading and livelihood activities. This then enables greater resources to invest in resilience actions to reduce impact of future disruptive climate events. The actual amount of resources in practice used to invest in future resilience actions by businesses greatly depends on the willingness to invest. This willingness is not only shaped by the availability of resources and knowledge of the consequences from recent disruptive climate events but also other factors. For example, landlords may decide not to invest in improving resilience of their housing stock if there is higher supply than demand and short term tenancies are more frequent. Short term goals of businesses and organisations, such as the need for expand quickly and personal values and interest will also affect the amount invested in resilience measures.

Finally, increasing severity and frequency of hazard events can also damage infrastructure critical to communities, such as transport networks (e.g. roads, bridges, pathways and other access routes), utilities (e.g. power lines, distribution centres and water supply) and telecommunications networks. In **'Infrastructure Disruption'** (R8) (Figure 5), the extent of damage influences the time taken to restore these impacts, which further increases overall disruption in communities. Support from and the capacity of outside organisations is critical for restoring infrastructure. This relates to capacity to identify the cause of damage, the scale of damage and the location of and then provide the necessary skills and resources for repair. Gaps and weaknesses in community infrastructure can increase the cost and complexities of community life, for example accessibility to neighbouring communities and places of employment and the longer this persists the more disruption occurs to wider community life. For example disrupting work, school, trade to local businesses, ability to access essential services such as health and care centres and engagement in wider community life. The greater the disruption to community life the less capacity there is likely to be in the community to deal with infrastructure disruption in the future and reduce the impact on the community more widely in the longer term.

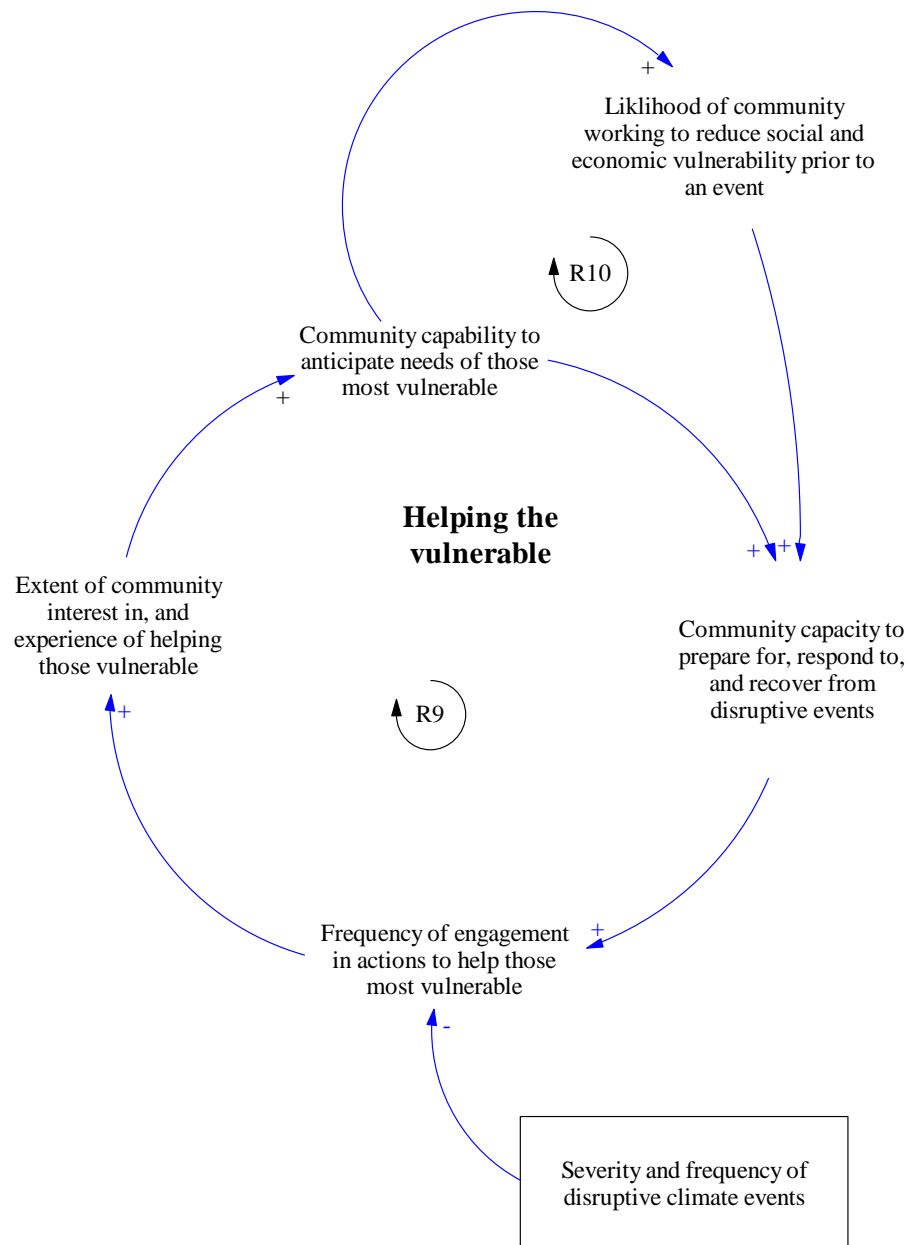


Figure 6. Helping the vulnerable systems diagram

The community resilience ‘system’

These different feedback loops relating to different aspects of climate disadvantage can be brought together to create a community resilience and climate disadvantage systems diagram (Figure 7). This diagram is not intended to cover all aspects of community resilience, but does highlight critical relationships between different aspects of community resilience identified through the work across the three communities in the Scottish Borders and specifically in relation to the issues around climate disadvantage. Bringing the previous causal loops together results in three additional reinforcing loops. First, in ‘**Community Cohesion**’, the increased interest and actions for working with those who are most disadvantaged has potential to reduce isolation, thereby reducing fear and stress. This eventually feeds back by increasing the overall capacity within communities (R11). In ‘**Evacuation**’, increased damage due to increased severe and more frequent events is more likely to result in the evacuation of residents, which increases disruption and decreases ability of households to manage budgets, thereby increasing stress (R12). Finally, in ‘**Provision of Services and Employment**’ disruption of businesses can reduce continued provision of services and employment, again affecting ability of some households to balance budgets (R13).

Implications

The community resilience system highlights a number of critical issues. First, it demonstrates strong relationships between different parts of the system where changes in one aspect will have a big impact on others. This includes strong relationships between stress, health and fear and helping the vulnerable (R2, R3, R9, R10 and R11); the importance of local businesses as being critical for the continuation of community activities (R6, R7, R13); and the significance of infrastructure in enabling communities to engage in resilience related activities (R8). This highlights the need for integrated thinking: working on individual issues alone will have limited success in enhancing overall community resilience and reducing disadvantage to climate change.

Second it highlights some key aspects that are at the centre of community resilience as perceived by participants in the project. This includes community capacity, which is a strong mitigating measure against extreme weather events. Having strong capacity within communities to work with emergency services and development organisations provides a critical foundation for community resilience. Ability to balance household budgets was also another critical component. This is compromised as longer term stresses of climate change become apparent. The diagram, which is based on the experiences of residents and other organisations, suggests that without this ability, erosion of the resilience of the community as a whole is likely to occur.

Third, a counter intuitive aspect is the impact of increasing frequency of extreme events, which has potential to act as a catalyst for mobilising community support for resilience (R9). It suggests that community capacity to look after those most vulnerable to disruptive climate events can be improved by closer working between community groups, emergency organisations and organisations focusing on reducing vulnerability more widely. This involves the coming together of different knowledge and skills dispersed within communities and across different organisations through an iterative process that links learning and action focusing on the link between communities, vulnerable people and climate change.

Fourth, it shows how the combination of both shocks and stresses related to climate change play out and interact. These dynamics highlight how the combination of shocks and stresses affect the management of household budgets. Combined with the local impacts linked to wider global economic challenges, such as local job losses and reduction in social welfare, the increased financial pressures from climate shocks and stress is likely to reduce community resilience to climate change overtime. It also highlights both the need for examining how budgets can be better balanced, the importance of preparedness as opposed to focusing only on recovery. It also highlights that demands for external

support are likely to grow unless more radical approaches to addressing climate disadvantage and ultimately moving towards more low carbon strategies are enhanced. Nevertheless, the impacts of changes associated with moving towards low carbon economies on disadvantage also need to be carefully considered.

Fifth, external support is critical to community resilience. Currently, external support is provided in terms of issues such as housing and energy, health, infrastructure and utilities and through assistance for community resilience groups for emergencies. Many participants highlighted that the different aspects of support are not well integrated, with missed opportunities for development of resilience of communities as a whole. Further, while there was some support for community development more generally, initiatives tended to focus on delivering specific outcomes, rather than on building general capacities that enable communities to develop the skills and know-how for further community engagement, participation and for dealing with the complexities of securing funding for and delivering community led projects (e.g. community based energy schemes). A key contribution of this project, for example, was provision of facilitation expertise, which was mentioned by many participants as being particularly helpful.

The systems diagram represents a collective view of community resilience in relation to climate change and disadvantage based on the data directly collected during the project. There are, however, four key aspects that are likely to have not been represented in the final systems diagram which were often implied in discussions but which did not emerge explicitly in the data. First, communities rely heavily on critical infrastructure (roads, telecommunications etc). Much of the activities and discussion regarding Newcastleton, for example, revolved around issues of community energy provision, mobile coverage and internet access. For such rural communities, resilience is as much about building and enhancing infrastructure, not just maintaining existing facilities as suggested here (Figure 7, R8).

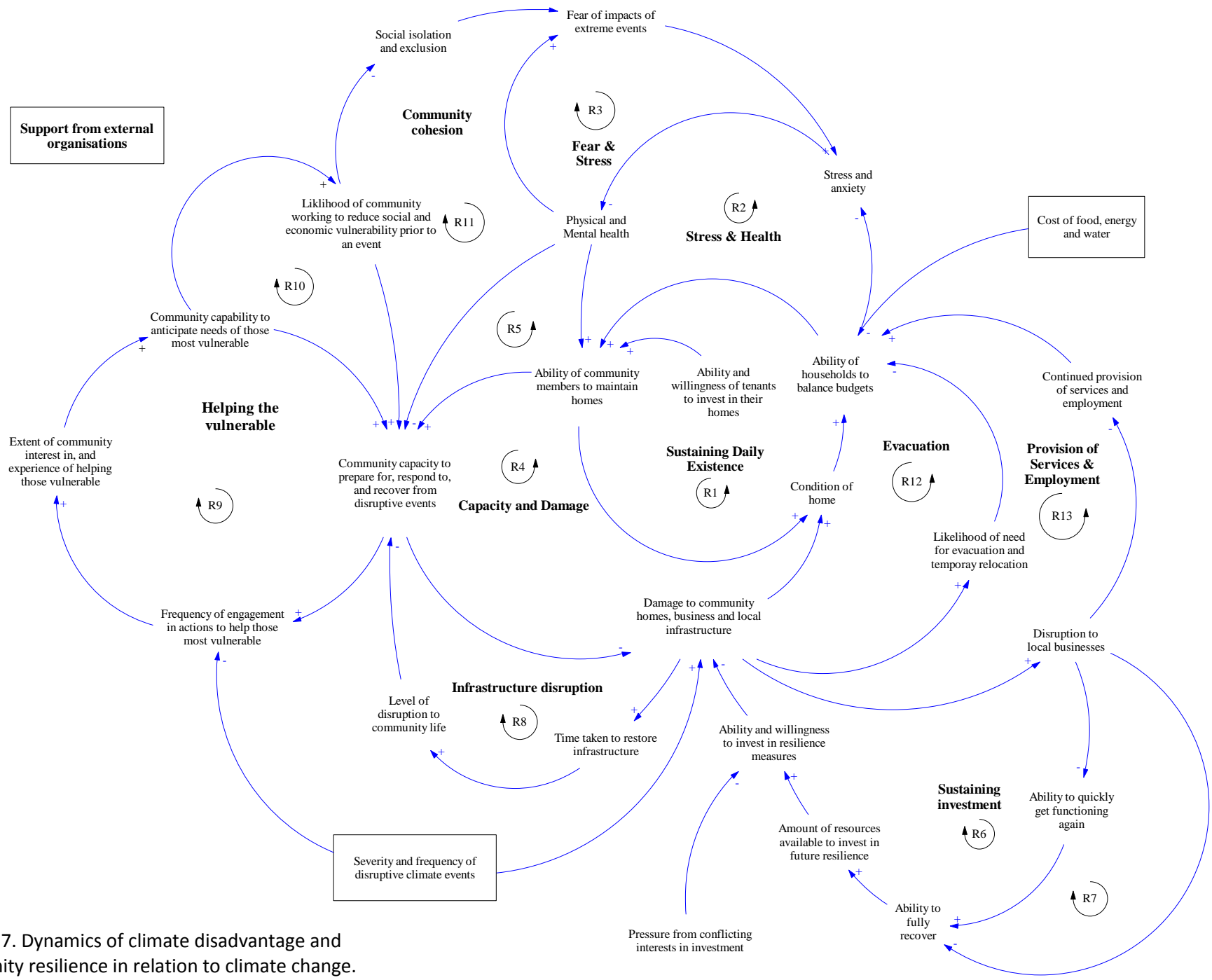
Second, another key area potentially under-represented are critical social dimensions. Their importance is hinted at in 'social cohesion' (R11). Social cohesion is complex and multi-dimensional. Yet although it did not often emerge explicitly, it was often implied as being important. In Peebles, for example, it was suggested that those working within the community tended to be on lower incomes than those who commuted to Edinburgh. It was therefore often the lower income groups that had potential to enhance social cohesion because they were much more grounded and had greater presence in the community. Because they were from lower income groups, however, a key challenge was maintaining daily existence, which limited capacity to engage in community level activities.

Third, while there had been extensive discussion about visions and future directions in workshops, explicit consideration of values also received limited attention. Resilience requires engaging in debates about social purpose and values around what developing resilience should look like, and for whose benefit (Friend and Moench, 2013). In relation to sustaining business investment in resilience initiatives, it was suggested that one of the competing interests was simply a desire for money and material prosperity (e.g. a new car rather than investing in resilience). This highlights that to build community resilience for future disruptive climate events there is a need to link up and increase greater awareness, concerns and willingness to take climate action. Evidence suggests that concerns and action in relation to climate change does not readily come from most individuals and regular state intervention to encourage action for climate change will be important (Wilson, 2014).

Finally, the systems diagram does not include how activities feedback on the climate system. Discussions about resilience mostly focused around abilities to be resilient to extreme events or other challenges facing communities, and thus mostly on how to *adapt* to changes that were emerging from climate change rather than on how to *mitigate* and reduce carbon emissions. Enhancing business activities to increase resilience, for example, without regard to considering how to rapidly move towards a low carbon economy, has potential to erode resilience. While climate issues operate at a scale wider than that of a community, actions cannot genuinely be considered to be enhancing

resilience if mitigation issues are not considered. As such, community resilience will require much more radical transformative kinds of approaches to genuinely enhance resilience.

In summary, analysis of the dynamics of climate disadvantage highlights the integrated and multi-dimensional nature of community resilience. This indicates the need for greater engagement across sectors (e.g. agencies providing community support), greater focus on enhancing general capacities within communities for them to be able to contribute more effectively to wider community resilience initiatives, need for working to rebalance some of the longer term stresses that make balancing household budgets difficult for some households, and for much greater attention to activities that will reduce carbon emissions. There are unlikely to be no quick fixes with regards to community resilience in relation to climate change and, in a context of ever reducing budgets, the challenges are substantial. There is however, significant capacity already in communities which, if harnessed, could have considerable impact for encouraging creativity and innovation and greater contributions to community resilience.



37 Figure 7. Dynamics of climate disadvantage and community resilience in relation to climate change.

How can National policy better support community resilience?

The previous sections focused on individuals and groups, then community level dynamics. In this section, we report on findings from the final workshop (phase 4) which sought to understand what a more integrated and synergistic policy landscape that could better support community resilience and address climate disadvantage would look like. The workshop involved examining the systems dynamics at community levels then exploring how wider policy environments could better support community resilience. Within the workshop, 16 interrelated ideas were identified to help strengthen the policy framework for improving community resilience (table 4). These ideas and the links between them are outlined as 4 main clusters of ideas.

Cluster 1: Resilience through the planning system

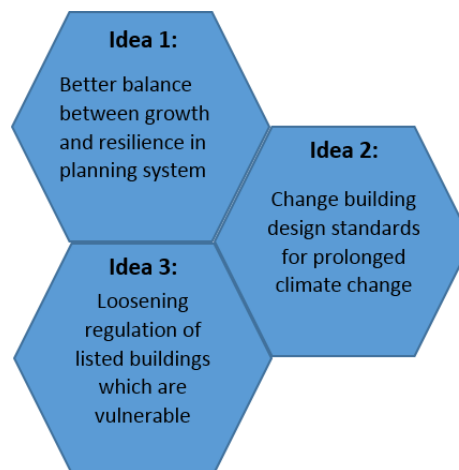


Figure 8: Cluster 1 - Resilience through the planning system

This cluster (cluster 1) relates to improving community resilience through the planning system (Figure 8). It involves three ideas: To provide a better balance between economic growth with improving community resilience (idea 1), change building design standards to better encompass action that helps build resilience more broadly and in the longer term (idea 2) and loosen the regulations relating to listed buildings and conservation areas (idea 3) to better enable action to improve the resilience of these building and the people who use them. These ideas and the relationships between them within the planning system are outlined below.

The first idea (idea 1) identified was the need for a better balance between the overarching goal of economic growth with the need to improve community resilience. Currently, encouraging economic growth is one of the main priorities that guides decision making across the planning system. Although strong, diverse local economies may contribute to community resilience, a narrow focus on economic growth may weaken other aspects of the system which are also important factors for improving community resilience. For example, decisions to site large areas of development in known flood areas. The planning system provides a strong pathway for improving community resilience to climate change as it brings together a wide range of policy sectors and operates at different but interrelated spatial scales. However to enable to happen in practice this there is a need for a broader, more integrated

approach in the planning system that moves away from a narrow focus on economic growth. The planning system brings together different policy sectors, goals and instruments. One such instrument is standards for the design of buildings (idea 2). It was suggested that these building standards could be strengthened for a more explicit focus on longer term resilience to climate change, joining up design aspects focused on improving resilience to flooding with resilience to wider, future climate changes challenges. Another aspect of planning policies relates to the goal to conserve the historic built environment. For example, through the designation of conservation areas and listed buildings. The third idea in this cluster (idea 3) is the need to loosen these regulations to provide more flexibility for action to improve resilience to climate change, for example for improved energy efficiency. In summary, this cluster of ideas highlights that the planning system could be improved as a pathway for improving community resilience.

The planning system is a mediation process aimed at balancing different priorities and specific policy goals, for example relating to economic growth, social justice, land development, environmental management, transport and other types of infrastructure. Thus, the planning system is often a critical focus for policy integration efforts. However, dominant priorities within the planning system shape how individual policies evolve and the scope and scale of decision making that shapes action on the ground (Allmendinger and Haughton, 2012). For example, if and how multiple benefits are considered to develop more integrated approaches in practice. The current focus of building design standards may be a reflection of a particularly strong focus more broadly in the planning system on economic growth and stimulating the housing market the short term. The current narrow focus on economic growth in the planning system has been described as a ‘dangerous obsession’ (Boland, 2014). A stronger framing in the planning system around community resilience would help shape a more integrated perspective and focus on the links and feedbacks between goals in the short and longer term. This would help facilitate the development of more synergistic planning policies that inform local decision making.

Cluster 2: The need to strengthen community capacity

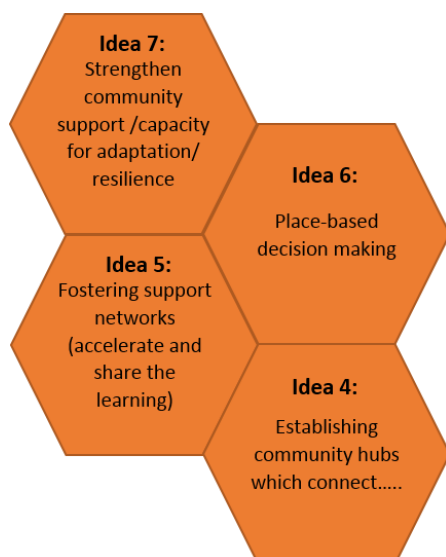


Figure 9: Cluster 2 – The need to strengthen community capacity

Cluster 2 relates to improving community resilience by strengthening community capacity (Figure 9). It includes 4 ideas; Establishing and strengthening community hubs (idea 4), developing and strengthen networks for knowledge sharing and learning between communities (idea 5), place based decision making (idea 6) and external support to strengthen community capacity to take action around

climate adaptation and mitigation. These ideas and the relationships between them to strengthen community capacity are outlined below.

The first idea (idea 4) relates to the need to develop and strengthen community hubs which bring together skills, knowledge and resources at the community level. Some formally structured groups within communities already act as a hub, for example, community or parish councils. However, in some communities other groups have a greater focus on community resilience and higher levels of capacity to mobilise community action, for example community development trusts. The hubs can be an important focal point around which to mobilise community capacity for action to improve community resilience to climate change. The second idea (idea 5) identifies a need to develop and strengthen support networks and learning between communities. This involves sharing lessons learnt, ideas to improve the capacity of different but interrelated communities. The third idea (idea 6) relates to the need for place based decision making. To improve community climate resilience in practice the link between context and decision making processes must be explicit as communities face different challenges and have different capacities. Involving communities more in local decision making can also strengthen relationships with organisations also involved in these processes. Existing tools were identified, such as the place standards, to with this and the Community Empowerment Act (2015) was highlighted as having potential to strengthen the involvement of communities in local decision making processes in Scotland in the future. The final idea in this cluster (idea 7) focused on the need for local decision making and action to have an explicit focus on climate change. Specifically, the need for an explicit focus on both climate change adaptation and mitigation was emphasised. For example, currently funding for community action linked to community adaptation to climate change and mitigation is available through the climate challenge fund, however most applications from community groups focus on action linked to mitigation. There is therefore a need to build community capacity to also focus on developing adaptive actions. In summary, this cluster of ideas draws attention to the important role of communities in improving community resilience. Specifically, this cluster highlights a need for an explicit focus on developing the capacity of communities to mobilise people and capacities to shape local decision making and actions that are joined up and with an explicit focus on action for climate change.

Between communities there is variation in the type and level of knowledge, relationships, skills and structures. Mobilising this for collective action is important however there is also a need for an explicit focus on developing pathways to strengthen this capacity. Developing networks between communities can contribute to this, for example to increase confidence and skills to explore issues differently and alternative actions. An explicit focus on developing the capacity of key groups in communities can also help improve the capacity in the communities for collective action, for example developing leadership skills that to facilitate collective action. For this to lead to action that improves community resilience to climate change however there also needs to be an explicit focus on joining up actions that focus on climate adaptation and mitigation.

Cluster 3: The need for better coordination across levels and organisations

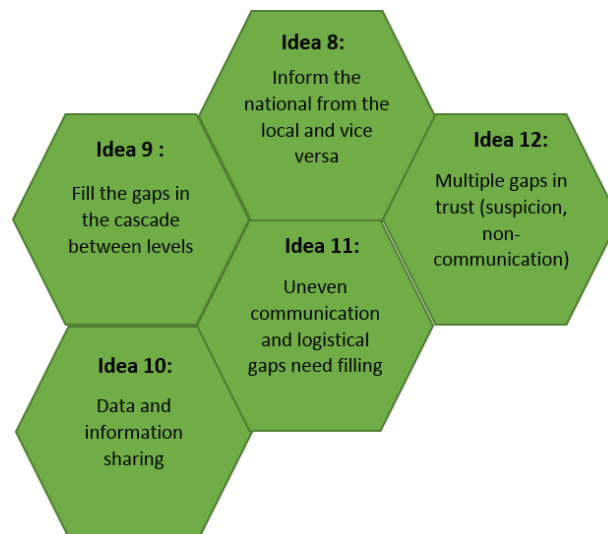


Figure 10: Cluster 3: The need for better coordination across levels and organisations

Cluster 3 focuses on the need for better coordination across levels of governance and different professional organisations with a role in different but interrelated aspects of community resilience (Figure 10) This involves 5 ideas: Better multidirectional flow of knowledge across levels of governance (idea 8), filling the gaps and addressing blockages in knowledge, information and resources between these levels (idea 9), better sharing of data and information between organisations (idea 10), enhancing the coordination of information, knowledge and resources to better match this with action at the local level (idea 11) and improving understanding and trust between the different groups (idea 12) for more joined up action to improve community resilience. These ideas and the relationships between them for better coordination between organisations and groups across levels of governance are outlined below.

The first idea (idea 8) is the need for a multidirectional flow of knowledge from the local to the national as well as from the national to the local. This relates to the need to move away from a ‘top down’ approach in governance towards an approach that enables learning about local practices to more quickly inform decision making focused on larger scales. The second idea (idea 9) is closely related to this focusing on the distribution of resources across levels of governance. This is important for more joined up and specifically to direct limited resources towards local level delivery, for example for local authorities to better support and facilitate community actions. This was identified as a particular need as currently local authorities are losing resources and at the same time may be expected to deliver additional responsibilities. The third idea (idea 10) focused on the need for better alignment horizontally between organisations, for example those involved in community planning partnerships. Currently ‘at risk’ databases exist, for example social care, NHS and utilities companies. Better sharing of data, whilst ensuring data is not misused as outlined by data protection principles would help develop a better understanding of needs and partnership working to help support these people. At the same time there is a need to strengthen this data and information, to ensure that a wider range of factors and groups are represented. The fourth idea (idea 11) focuses on better coordination of resources and information provision at the local level by filling logistical gaps. For example the right information and flood protection measures deployed when and where needed. The fifth idea (idea 12) focuses on the need to build trust and understanding between organisations that have skills, knowledge and resources to support community action. This specifically relates to the need for

stronger partnerships beyond the emergency planning sector with organisations with skills and resources to work with other organisations and communities to improve community resilience to climate change. For example building trust between councils and the third sector to more effectively combine capacities. In summary, this cluster emphasizes the need for coordination between the different organisations and groups that operate across different levels of governance, from the local to the national.

There is often already a strong culture of partnership working between public organisations, for example focusing on coordination for emergency planning and to bring together organisational skills and resources in broader community planning partnership processes. However, there is a need to strengthen collaborative approaches across levels of governance and between different groups that can contribute to planning and delivering action to improve community resilience. This involves better coordination of the flow of data, information, knowledge and resources and combining skills and other capacities for both reactive action to respond in emergencies but also proactive action to reduce vulnerabilities and improve community resilience more widely. This will require a focus on developing understanding and trust to facilitate more collaborative practices to enable more effective outcomes for improving community resilience to emerge.

Cluster 4: The need for a holistic approach to community resilience

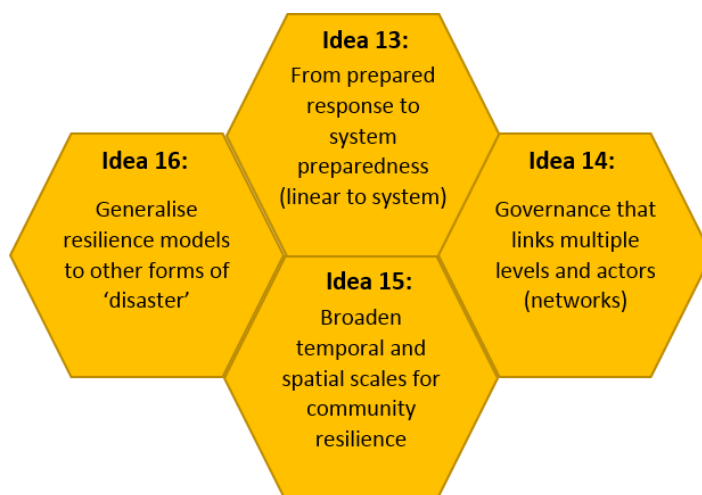


Figure 11: Cluster 4 – The need for a holistic approach to community resilience

Cluster 4 relates to the need for a more holistic approach to adapt perspectives and structures to better shape more integrated policy and practice for improving community resilience across contexts (Figure 11). This involves four ideas: moving from the linear perspective presented in the emergency management model (prevention, preparedness, response and recovery) to a broader systems perspective of community resilience (idea 13), governance structures that effectively links multiple levels and actors together (idea 14), broadening the temporal and spatial scales in decision making to improve community resilience (idea 15) and generalising systems models/ perspectives to facilitate learning across disaster management situations (idea 16). These ideas and the relationship between them to develop more holistic approaches more broadly are outlined below.

The first idea (idea 13) relates to the limitations of a linear, emergency management model to plan and deliver actions to improve community resilience to climate change. Moving to a systems perspective will help broaden the current, dominant conceptualisations of community resilience to climate change beyond the emergency management. More specifically a systems perspective would provide a more explicit focus on the relationships and feedbacks between issues and the benefit from more joined up actions, enabling key leverage points in the system to be more readily identified around which capacities, such as skills and resources, can be combined and mobilised. The second idea (idea 14) relates to the need for a more strategic approach to develop networks between the different levels of governance and actors. A strategic focus across the system on the importance of strong, inclusive networks up across levels, sectors and actors can help align goals to make this happen in practice. The third idea (idea 15) focuses on the need for the scales considered in different but interrelated decision making processes to be expanded. This relates to spatial scales to encourage the development of actions across larger areas that deliver multiple goals, for example integrated catchment management for managing flood risk. It also includes broader temporal scales in decision making, moving away from a focus on immediate outcomes and short term perspectives. Lastly, the fifth idea in this cluster (idea 16) identified the added value of systems modelling to learn identify lessons and gaps in learning from specific disaster situations, for example the 2001 foot and mouth crisis and the current oil industry crisis. This related to application of systems thinking more broadly and more specifically learning about 'fixes that failed' to help inform strategic level action for future disaster planning. In summary, this cluster draws attention to the need for more holistic approaches across the system that enable structures and processes to develop that connect together the different levels of governance and actors people, broadens perspectives and facilitates learning more widely.

Practices of individuals, groups and organisations shapes and is shaped by many factors. One important factors relates to dominant ideas. For example, dominant concepts and the ideas attached with them help in the selection of priorities, what problems require solutions and how the solutions available. How we talk and think about issues influences the actions flowing from this process (Schmidt, 2011). At a strategic level how community resilience is conceptualised helps to shape the development of structures, processes and practices for the inclusion of different actors, issues and scales for more joined up action to improve community resilience. More holistic, joined up conceptualisations that encourage more systematic thinking and doing is important. However, currently different conceptualisation of community resilience exist and compete, hindering more joined up, collaborative efforts in practice and the linear, emergency planning conceptualisation of community resilience is prevalent in policy and practice.

Linkages between clusters: What would a more integrated and synergistic policy landscape look like for community resilience?

Cluster 3: Better coordination across levels and organisations

Filling the gaps in data, information, knowledge and resources between levels of governance and organisation with different but interrelated remits relevant to improving community resilience.

Cluster 1: Resilience through the planning system

Rebalance the priority for economic growth and other planning policy goals with the need to improve community resilience through formal planning processes.

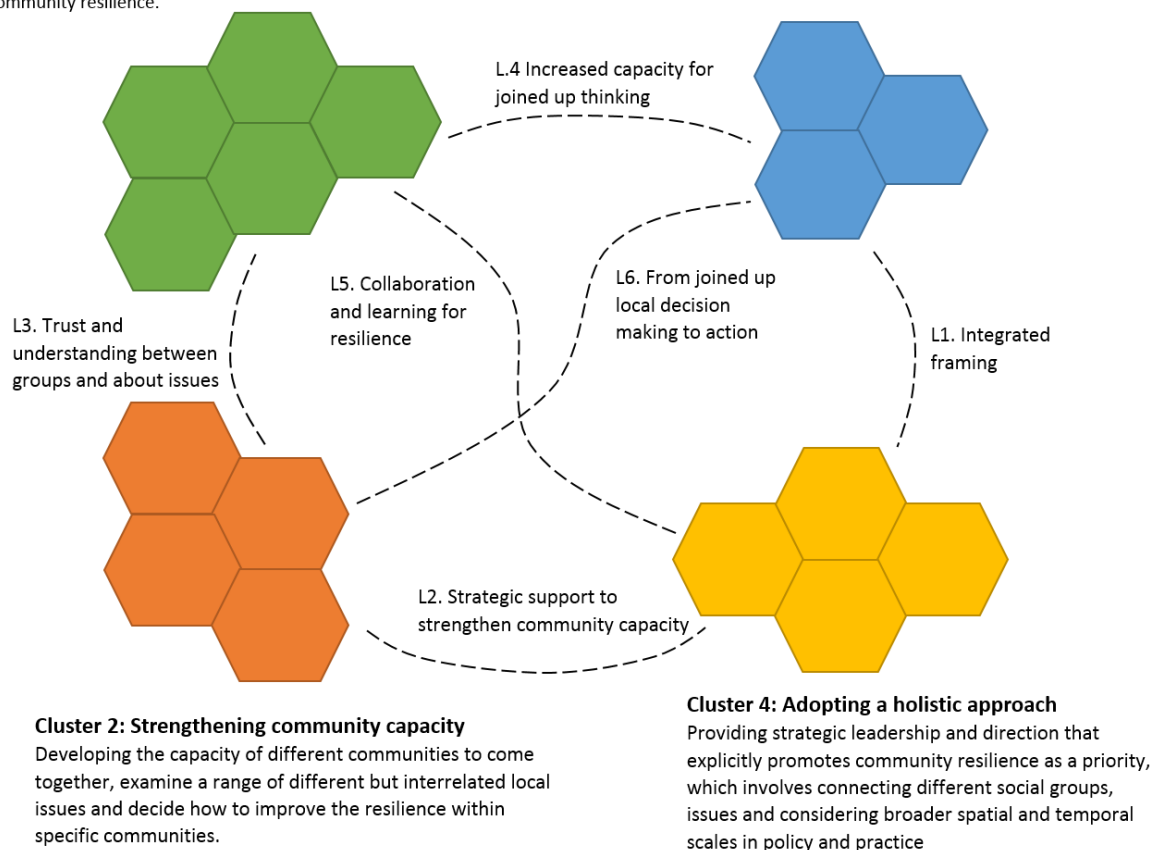


Figure 12: Aspects identified as important to develop a more integrated and synergistic policy landscape for community resilience

These four clusters of ideas all relate to key spaces to focus on to help bring about a more integrated and synergistic policy landscape for community resilience. Some key relationships between these clusters (Figure 12) are outlined below.

There are a number of links between each of the clusters. The first link (L1) identified is between the need for a stronger focus on community resilience in the planning system (cluster 1) and the need for a more holistic framing for community resilience (cluster 4). This link between cluster 1 and cluster 4 relates to developing a **more integrated framing of community resilience**. An integrated framing would help broaden perspectives to include a wider range of actors and issues for the design and operationalisation of activities for improving community resilience. In the planning system a more integrated framing of community resilience would help focus more attention on the links between different issues and scales and therefore the need to consider and balance a range of factors in

decision making. Importantly this would balance the need for economic growth with other factors that may be important for community resilience, reducing the likelihood of unintended consequences on other important aspects within the system that can reduce community resilience in the longer term.

The second link (L2) identified is between developing a more holistic approach to community resilience (cluster 4) and the need to strengthen community capacity (cluster 2). This link relates to **strategic support for focusing resources to build community capacity** for improving community resilience in the longer term. Specifically, a broader, more holistic approach to community resilience will contribute to a greater focus on the important role of communities, local decision making and action to build community resilience. However, with a high level of competition for limited resources strategic leadership is necessary to ensure that resources are directed towards facilitating this in practice.

The third link (L3) is between strengthening community capacity (cluster 2) and better coordination between levels of governance and organisations (cluster 3). This link relates to **improving trust and understanding across the system** and the different actors and groups who need to be involved in planning and delivering actions to improve community resilience. Specifically, better sharing of data, information, knowledge and distribution of resources across levels and organisations should also involve the community level. Improving trust and understanding can strengthen relationships not only between organisations but also with communities and thus increase the likelihood of more effective inclusive collaborative practices to improve community resilience in the longer term.

The fourth link identified relates to an increase in **capacity across levels and organisations for more joined up thinking** (L4). This connects better coordination across levels and organisations (cluster 3) with the need to improve the planning system as a delivery pathway for improving community resilience. Specifically better sharing of data, information, knowledge and resources between different levels of governance and organisations can help increase the capacity of these different groups to think in a more joined up way. Many of these levels of governance and organisations also play an active role in shaping approaches and decisions within the planning system and more joined up thinking can help identify policy gaps and conflicts that may hinder the ability of the planning system to deliver improvements for community resilience.

The fifth link relates to **collaboration and learning for community resilience** (L5) and connects the need for better coordination across levels of governance and organisations (cluster 3) with the need for more holistic approaches to community resilience (cluster 4). Better coordination across levels and organisations involves strengthening existing and developing new collaborations. In practice this requires strategic leadership to apply a more holistic approach which formally recognises the important role of the different actors and issues in decision making processes for improving community resilience. Collaborative practices involve the sharing of data, information, knowledge and resources but also needs to include less tangible benefits such as learning between the different actors and groups involved. This learning can relate to the different issues and factors that help shape community resilience more broadly and in specific contexts as well as learning about collaborative partners perspectives, goals and practices. This learning can help strengthen future collaborative efforts.

The sixth link identified is between the need to strengthen community capacity (cluster 2) and the need to strengthen the planning system to improve community resilience. This link (L6) involves **joining up local decision making with action**. Action at the community level is often shaped within the planning system. Planning policies can help or hinder action for community resilience. Better aligning planning policies with community resilience approaches can help communities better deliver local actions and reduce the gap between local, joined up decision making and action on the ground.

Table 4: A summary of the ideas identified to develop a more synergistic policy landscape to help improve community resilience to climate change

Synergistic ideas aimed at helping community resilience	Current policy situation that may be hindering community resilience	Important dimension	Cluster
1. Better balance economic growth with improving community resilience	Overarching strategic priority in planning system is improving economic growth.	Strategic focus in planning system	Cluster 1: Resilience through the planning system
2. Change building design standards for prolonged climate	Building design standards shapes future housing stock but may focus on addressing immediate, more visible issues.	Policy gaps in planning system	
3. Loosening regulation of listed buildings which are vulnerable	Goals to protect the historic environment may restrict action.	Policy conflicts in planning system	
4. Establishing community hubs which connect.....	Limited focus on building the capacity of community councils*. Other community groups may have more capacity to connect issues and people in the community.	Supporting capacity in communities to engage with organisations (vertically)	Cluster 2: Strengthening community capacity
5. Fostering support networks (accelerate and share the learning)	Focus on vertical connections between of communities. Limited focus on horizontal connections, for example to facilitate learning between communities.	Supporting capacity in communities to engage with organisations (horizontally between communities)	
6. Place-based decision making **	In practice decision making does not meaningfully involve communities. Decision making locally is often not very joined up.	Supporting community capacity to meaningfully influence local decisions	
7. Strengthen community support and capacity around adaptation/ resilience	Actions developed in communities explicitly linked to climate change often focus on mitigation and less so on adaptation.	Supporting capacity in communities to identify and develop community actions that contribute to climate adaptation.	
8. Inform the national from the local and 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 decision and action at other levels.	Better coordination across levels for multidirectional flow of knowledge and information	Cluster 3: Better coordination across levels and organisations
9. Fill the gaps in the cascade between levels (interests, resources, individual households)	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.	Better coordination across levels between duties and local action	
10. Information (data) sharing – much opportunities for data sharing	Data and information on disadvantaged groups is held by some public bodies and utility companies. Sharing is limited. Some limited sharing may occur during emergencies.	Better coordination between public organisations of data and information	
11. Uneven communication and logistical gaps need filling	Equipment and support does not always match up with need in emergencies.	Better coordination between organisations and communities to fill logistical gaps in emergencies	

12.	Multiple gaps in trust (suspicion, non-communication)	There is a lack of understanding and trust between those already involved in organisational partnerships and those that have skills and capacity relevant to improve resilience more widely. For example between the third sector and local authorities.	Developing understanding and trust for better coordination between organisations	
13.	From prepared response to system preparedness (systems approach rather than linear)	A linear model that delineates action and responsibilities into either prepare, respond, recover dominates.	Holistic approach to better focus on the systematic relationships and feedbacks between issues and actions	Cluster 4: Holistic approach for community resilience
14.	Governance that links multiple levels and actors (networks)	The current focus to structure and organise capacity more widely is clustered, for example public bodies or around a specific issues. Links between these are limited.	Holistic approach to better join up capacities and actors more widely	
15.	Broaden temporal and spatial scales for community resilience	Strategic decisions are not often framed around broader spatial and long term scales, which limits the type of action on the ground.	More holistic approaches across decision making processes to consider broader scales	
16.	Generalise resilience models to other forms of 'disaster'	Strategic responses to disasters more generally involve successes, inefficiencies and/ or unintended consequences. However learning about this more widely may be limited.	Holistic approaches across contexts to facilitate learning	

* Community councils in Scotland are defined as district councils in England and Wales/ ** Placed-based decision making may also be referred to more broadly as 'localism'

Implications

In summary, a number of different ideas were identified and clustered together to highlight how the policy landscape could be strengthened to help bring about actions that improve community resilience. These ideas are summarised in table 2 and focus on different aspects of the current policy landscape, for example concepts, goals, resources, actors, knowledge and skills which shapes local practice. Improving community resilience needs to encompass, join up and strengthen all of these different components.

Strategic leadership to frame community resilience that provide a more holistic perspective is critical. This can help shape structures and networks to better link together the issues, actors and actions to shape outcomes in communities that continue to contribute to improving community resilience through time. Community capacity is often overlooked as valuable resources to help shape decision making for these outcomes. A focus in policy on building capacity across the system to better involve them in these processes is essential. This involves shaping the capacity of organisations to better work with and ultimately collaborative with communities. It also requires a focus on identifying key areas of existing capacity in communities and fostering this to help them better organise themselves and engage. One important dimension is community capacity to join up actions, and this must include action to mitigate and adapt to the impacts of climate change. The planning system is an important pathway for strategic planning and delivering of actions that may help or hinder action to contribute to improving community resilience. Currently, however opportunities for this are often missed. Critically to bring about change to enable a turn towards more integrated decision and actions across scales for community resilience to climate change requires high level commitment and determination to avoid 'old wine, new bottles', where 'new' approaches are superficially transposed to fit with existing practices and structures and to provide space for experimentation and learning more widely (Pelling et al., 2008).

Discussion

The results present key findings in relation to three key areas. First, key groups considered to be disadvantaged in relation to climate change in the communities. Second, key dynamics of community resilience in relation to disadvantage and climate change operating at the level of communities. Finally, policy needs operating at national scales to highlight what is needed to generate a more comprehensive policy approach to community resilience. These are summarised below and the wider implications for policy discussed.

First, examining who was considered to be most disadvantaged to climate change reveals six key groups that are particularly disadvantaged by climate change than other groups within communities. This included: elderly people with existing health issues, people with low income, local businesses and enterprises, tenants, essential infrastructure users, and families. A variety of different factors that contributed to climate disadvantage for each of these groups were identified. For example, for local businesses these related to the importance of local businesses and other enterprises that as a group provide multiple goods, services and facilities that support local economies and community wellbeing. Furthermore, tenants were identified as particularly disadvantaged due to their lack of power and rights to make changes to the quality of their homes. A number of factors were linked to more than one group. These involved direct impacts from flooding but also from changes in the costs and ability to access essential goods and services, such as food and energy. Other factors were identified that indirectly related to capacities to address climate impacts, such as new businesses and more transient tenants highlighted as being particularly disadvantaged due to a lack of local knowledge and weaker connections with others in the community.

Second, examining the relationships between these factors of climate disadvantage reveals links between issues and actions between different units, for example between households, groups and the community as a whole, and across traditional areas of action (or sectors), for example between health and wellbeing, housing, emergency planning, community development, transport, employment and enterprise development. Furthermore, examining this community system through the lens of climate disadvantage reveals some additional issues that are important mediating factors in the system. The first is current levels of community cohesion and the second is community capacity to take action now and in the future to improve community resilience more broadly. Together these involve connecting, people, skills and knowledge across the community which are important dimensions to bring about collective action.

Third, examining policy needs operating at national scales highlights four key areas to help strengthen policy landscapes to better shape action to improve community resilience to climate change. The first policy area focuses on developing more integrated approach within the planning system improve community resilience to climate change. Broadly this relates to balancing the overarching priority for economic growth with other outcomes that also contribute to improving community resilience. Specifically there are some specific gaps and conflict within planning policies that may be hindering actions to improve community resilience emerging from planning decision processes. The second policy need area draws attention to the importance of action that actively strengthens capacity in communities. This relates to the capacity in communities to organise and mobilise collective action, engage in and shape integrated decisions, plan and deliver actions that involve mitigation and adaptation and supporting communities to share knowledge and learn from each. However to bring this about in practice strategic support is vital. The third policy need area emphasises the importance of better coordination across levels of governance and organisations for the multidirectional flow of data, information and knowledge. This can help fill current gaps in trust, logistics and reduce gaps between national policy and local action. This can also lead to enhanced collaborative working and learning both horizontally and vertically that goes beyond the existing emergency planning focus in community resilience practice. This must therefore include a wide range of organisations working with

communities. The fourth policy need area identified focuses on a need to actively broaden the current approaches to community resilience to move to a more holistic perspective. This would help draw attention and capacity towards the need to better connect issues, scales and groups to facilitate collaborative working and learning for more joined up policy instruments, decision making across levels and delivery of synergistic actions.

Currently at a national level there are a number of policies aimed at shaping action linked to climate change. This includes actions linked to emergency planning and mitigating and adapting to the impacts of climate change. The need to engage communities and avoid action that exacerbates existing inequalities is apparent in some of these national policies. For example, involving community groups in local flood action, supporting vulnerable people in emergencies, developing community benefits from renewable energy and focusing on reducing fuel poverty (Scottish Government, 2014a, 2015; Spray, 2009). Recently the right for communities to be involved with and to shape local decisions has been significantly strengthened at the national level through the enactment of the Community Empowerment Act (2015), although how this will shape alternative outcomes in communities is as yet unclear (Scottish Community Development Centre, 2015; Skerratt and Steiner, 2013). Elements of the existing policy landscape are already implicitly orientated towards helping to shape action to improve community resilience that takes into account the many interrelated factors that contribute to climate disadvantage at a community level (Steiner and Markantoni, 2013).

Notwithstanding this, the findings presented in this report taken together draw attention to some key dimensions that could help strengthen policy and practice for community resilience to climate change across levels of governance. This includes an emphasis on the need to consider links between visible climate shocks and underlying stresses. Together these factors interrelate and help shape community resilience. Such factors include changes to food, water and energy systems that may lead to changes in the cost and supply of these essential items in combination with more visible shorter term shocks such as flooding. In reality it is the intersection of different factors and how these factors connect together and with wider issues that lead to some people in communities to be more disadvantaged to climate change than others. These intersections draw attention to the increasing likelihood of some individuals being pushed further towards critical thresholds that can lead to sudden and rapid declines.

Communities are not easy to define but one important dimension is that they involve groups with different types and levels of knowledge, resources, skills and relationships and who are all commonly connected, for example by a common place or by a shared practice (Skerratt and Steiner, 2013). The impacts of climate change are complex and interrelate with other issues that communities face. What happens at one scale has a bearing on wider scales (Berkes and Ross, 2013), for example the level and configuration of climate disadvantage experienced by some groups within a community will have knock on effects for community resilience to climate change. A joined up, integrated examination of the connections at a community scale can identify important leverage points for action that deliver multiple benefits for people, communities and more widely. However, without an explicit focus on climate disadvantage there may be unintended consequences from community level action and missed opportunities to tackle climate change in communities that does not exacerbate existing levels inequality more broadly (Eriksen et al., 2011).

A joined up approach also must include action that brings together emergency planning with action that shapes community resilience more broadly. Reconceptualising community resilience to present a more holistic perspective but that still enables organisations and groups to identify clear roles and responsibilities is important. No one person, group or organisation has the full capacity now or in the future to take action for climate change at a community level. Developing much broader collaborative approaches is therefore critical. However, collaborations need to also meaningfully involve communities.

Capacity levels to identify issues, influence decision making processes and plan and deliver actions varies across communities, with different combinations of people, skills and knowledge (Norris et al., 2008a). An explicit turn in policy towards strengthening capacity at a community level is essential to enable actions and positive outcomes to emerge. To ensure this delivers multiple benefits for communities whilst also linking to climate change action also requires capacity in communities to collectively engage in integrated decision making processes. It also requires capacity to do this across levels of governance to engage and collaborate with communities. This may be challenging for a number of reasons, Firstly, local authority budgets and activities are being scaled back. Second, local authorities have obligations to large numbers of communities and to equitable distribution of resources to them. Thus some communities with additional needs may be increasingly 'left behind'. Thirdly, current skills and practice in communities and local authorities may weaken trust between the two (Steiner and Markantoni, 2013).

For the development of action to improve community resilience that takes account of climate disadvantage there must be an explicit focus on capacity to make links between local issues and climate change. This involves action to adapt to and mitigate climate change whilst also delivering wider community benefits. Currently in policy there is a strong focus on strengthening vertical links between public organisations and communities (Scottish Community Development Centre, 2015) however it is unclear if and how the capacity to bring about this change will be shaped. There is also a limited focus on strengthening horizontal networks for learning and sharing between communities, despite this being recognised as an important dimension for improving community resilience (Fazey et al., 2007; Tschakert and Dietrich, 2010).

Collaborations often involve bringing together different goals, skills, levels of resources and perspectives. In theory the benefits may be obvious but in practice this can be challenging. To help facilitate this space needs to be created to develop understanding, trust, identify commonalities and address wider barriers that may be hindering collaboration in practice. A more holistic conceptualisation of community resilience that moves beyond the immediate consequences of flooding and other disruptive climate events can help in this regard. Furthermore, mapping out links and connections between issues systematically in particular contexts may also be helpful to identify leverages areas in the system around which to frame collaborative practice and action in the short and longer term.

Conclusions

In conclusion applying a systematic approach to examine community resilience through a climate disadvantage lens helps to identify leverage points for more synergistic action across levels and between different actors with a potential role to play in building community resilience now and in the future. Action to improve community resilience taking into account climate disadvantage is only possible by improving the capacity to join up different groups and organisations, issues and capacities more broadly. There needs to be a clear focus on facilitating action that not only delivers action for climate change but that also avoids exacerbating existing inequalities. This provides a bridge between two important national policy areas but to enable this to come about in practice policy landscapes need to be strengthened to bring about more integrated, collaborative practice that meaningfully involve communities to identify and shape actions that shape their collective resilience to climate change.

Recommendations

- Explicitly identify and develop strategic links between climate change, community development and inequality policy goals across levels of governance.
- Develop a climate disadvantage fund. Currently subsidies for property level protection measures still lock out the most financially disadvantaged.
- Reframe community resilience to systems approach at a national level setting out how this connects different policies and can provide a focus for enhancing policy integration for improved outcomes.
- Encourage (by providing space and motivation) for a more iterative approach that is shaped around constructive dialogue and mutual learning. This should focus on both horizontal dimensions (in communities and between communities) and vertical dimensions (between local authorities and communities).
- Provide incentives (rewards) for public bodies for improving collaborative scope and practice, community engagement that delivers outcomes and joined up/ integrated action at the community level.

- Focus on capacity for wider collaborative practice. Tools are helpful but insufficient on their own, there is a need to also develop knowledge and skills.
- Highlight benefits, outline some of the challenges that need to be overcome and possible ways to do this and provide added incentive for wider collaborative practice between organisations, especially collaborations that have a focus on learning and involving others outside the emergency public bodies partnerships.
- Use systems models to identify key areas to help facilitate collaborations e.g involving community groups and third sector.

- Focus on strengthening the skills in communities, for example identify key groups in communities and upskill key people to organise, mobilise and engage communities better in decision making more broadly. This is important for delivering the aim of the Community Empowerment Act (2015).
- Establish twinning type partnerships or clusters between communities which involve sharing ideas, exploring new ideas and mutual learning to stimulate action at the community level. The clusters could focus on key climate disadvantage dynamics. This could provide a lens through which to explore alternative actions.
- Understand key motivations for taking action and bringing about change in communities. This should involve different levels and how they interact, for example at a household level, helping climate disadvantaged groups and collective action to improve community resilience for emergencies and more widely.
- Provide support for new and existing local businesses that recognises and fosters the diverse contributions they make to communities, socially and economically.
- Identify business owners to work with who are interested in helping the community. These people may have existing leadership and entrepreneurial skills.

- Strengthen the skills and divert resources to facilitate better engagement with communities more broadly. This has benefits across sectors. Don't assume the capacity is there, it often isn't and don't assume that the spirit of policy gets turned into practice. Goals may get watered down as they move through the policy process.

- Be ready to use flooding events and other weather related events as a focus around which to develop community processes and structures and skills to mobilise, organise and develop community capacity in short and longer term.
- Make the planning system more flexible and at the same time more accountable to communities. Frame economic growth around community resilience, not the other way round.

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2015-1 University of Dundee Dundee DD1 4HN, UK

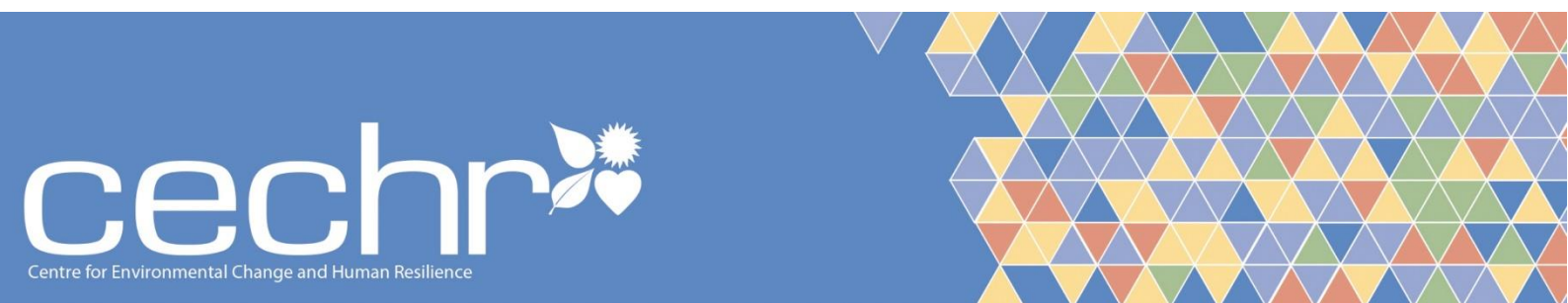
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