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Community Resilience to Climate Change

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Climate change impacts, including shocks (such as extreme weather events) and stresses (such as changes in the cost of living), interact to generate climate disadvantage. Building community resilience to climate change requires collaborative action that involves working with communities and institutions and across different sectors. The Scottish Borders Climate Resilient Communities Project (SBCRC) used action research to improve understanding and approaches to building climate resilience.

Key messages

- Community resilience to climate change is a systemic issue where climate shocks and stresses and existing vulnerabilities give rise to climate disadvantage. Holistic approaches are needed to identify and work with key leverage points, such as helping disadvantaged groups manage household budgets and develop community capacity for resilience.

- The participatory action research, which viewed community resilience building as an ongoing process, resulted in three kinds of outcomes: tangible outcomes (e.g. changes in the design of a major flood scheme to deliver mitigation actions); learning outcomes (e.g. increased understanding of social dimensions of climate change); and capacity outcomes (e.g. new flood risk and renewable energy groups).

- Building community resilience is a complex social process, involving bringing together people with different perspectives and capacities that vary across settings to help shape locally relevant outcomes. Purposeful design with teams with diverse expertise (including facilitation and participation) are needed to navigate the different tensions involved.

- Community resilience requires measures that simultaneously mitigate and adapt to climate change. This requires explicitly engaging with climate change in community-based activities to elevate the importance of the issue in communities, albeit through approaches that link climate change to local issues.

- A more integrated national policy landscape is needed to shape effective action at the community level for building community resilience through: improving spatial planning; strengthening policies to build capacity; enhancing coordination across levels of governance; and providing strategic leadership to explicitly promote community resilience.

Aims, approach and key outcomes

The Scottish Borders Climate Resilient Communities Project (SBCRC)[1] was a participatory action-research project that sought to build community resilience to climate change through working in three communities with a history of flooding in the Scottish Borders. It aimed to:

- Understand some of the critical factors that contribute to shaping community resilience in the context of climate disadvantage;
- Understand how community resilience to climate change can be developed in different local contexts in practice by supporting and facilitating engagement between members of three local communities and other stakeholders in the Scottish Borders region, and evaluating outcomes;
- Draw out lessons for policymakers and practitioners on how to support the development of community resilience in the context of climate change.

The project was structured around nine workshops (three per community) that brought together different organisations (e.g. the Scottish Borders Council, local NGOs) to examine issues and develop actions to build community resilience in the context of climate change. A tenth workshop used the outcomes from the work within the communities to examine how a more integrated and synergistic national policy landscape in Scotland could be developed to enhance community resilience to climate change. An evaluation helped to inform project delivery and the overall findings.

Outcomes

Diverse outcomes emerged from the process that was used to work across the three communities. These involved tangible outcomes as well as many other outcomes relevant to building capacity for resilience. Three broad types of outcomes emerged:

- **Tangible outcomes:** in one community, changes were made to the design of a major flood scheme (e.g. affecting materials and features in the physical design and incorporating climate mitigation actions). Other outcomes included securing additional funding (e.g. to increase community engagement for a major flood scheme); new sources of information (e.g. an in-river renewable energy feasibility study); and new plans (e.g. for local authorities and communities to collaboratively develop a community resilience group).

- **Capacity outcomes:** these involved the development of new groups within communities (e.g. a renewable energy and a flood risk and community resilience group). Relationships were also developed and strengthened for greater shared understanding and common goals between communities and local organisations and within communities (e.g. between community groups focused on renewable energy and those supporting local art and culture).

- **Learning outcomes:** 10 key learning outcomes emerged (e.g. opportunities and support for action, understanding the nature of climate disadvantage, impacts from climate change and working with others). Some learning outcomes were more pronounced for some types of participants (e.g. the learning of those from government and non-government organisations involved a greater understanding of local issues and principles for designing and implementing community resilience initiatives following participation in workshops).

Community resilience is a systemic issue

The project examined how different factors gave rise to climate disadvantage. This work was based on eliciting local knowledge from community members and different organisations. It confirmed findings from previous studies about the kinds of people most disadvantaged by climate change (e.g. elderly, families with low incomes). The results highlight that developing community resilience is a systemic issue which requires addressing underlying patterns of climate disadvantage emerging from the interactions between different factors (Figure 1). Through examining these interactions, six key conclusions can be drawn about strategic actions for enhancing community resilience:

1. The issues relating to climate disadvantage are highly integrated. Holistic approaches are therefore needed that work across different sectors. Piecemeal solutions alone will not enhance resilience and greater attention needs to be given to social issues (e.g. those arising from stress and anxiety), as well as infrastructure investment and technological solutions.

2. A key aspect missing from the systems diagram is the link back to reducing the threat of climate change. There were very few major attempts in communities to reduce carbon emissions, with the focus being mainly on adaptation (e.g. to flooding) rather than mitigation. Reducing carbon emissions (e.g. by reducing energy demand or using renewable energy) is one of the most important ways of enhancing resilience in the long-term.

3. Longer-term stresses play a significant role in shaping climate disadvantage and resilience. This includes stresses arising from climate change (e.g. potential increases in food, energy and water prices) as well as other underlying stresses in communities (e.g. chronic health problems). Focusing on addressing underlying stresses is important for community resilience.

4. Two key bottlenecks in the system are 'community capacity' and 'ability to manage household budgets'. These are both compromised as longer-term stresses of climate change become more apparent. A stronger focus on building community capacity and enhancing peoples' abilities to manage the costs of living are key for enhancing community resilience.

5. Two key feedbacks can be strengthened that could lead to positive knock-on effects in other parts of the system. These include the dynamics associated with helping the vulnerable (R8 & R9), where exposure to crises can result in greater community engagement, interest, understanding and motivation to look after the most vulnerable members of a community. There is therefore potential to strategically work with communities during real events or through artificial ones (e.g. exercises) to enhance community capacity for resilience over the longer term.

6. A powerful way of addressing underlying systemic issues and enhancing resilience is to focus on challenging underlying assumptions, values, norms, and rules that give rise to the dynamics of a system. Many such aspects were identified (e.g. ability of tenants to invest in homes is restricted by particular rights and rules as well as low incomes, and conflicting interests between short and long term benefits). By making such aspects explicit and by actively working with them, more fundamental changes which could support resilience building are possible.

Figure 1: Systems diagram of climate disadvantage

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

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

= critical junctures and bottlenecks

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

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

5. Accelerating positive reinforcing feedback loops (e.g. through capitalising on opportunities provided by crises) will have a significant impact on the system as a whole, and increase adaptive capacity.
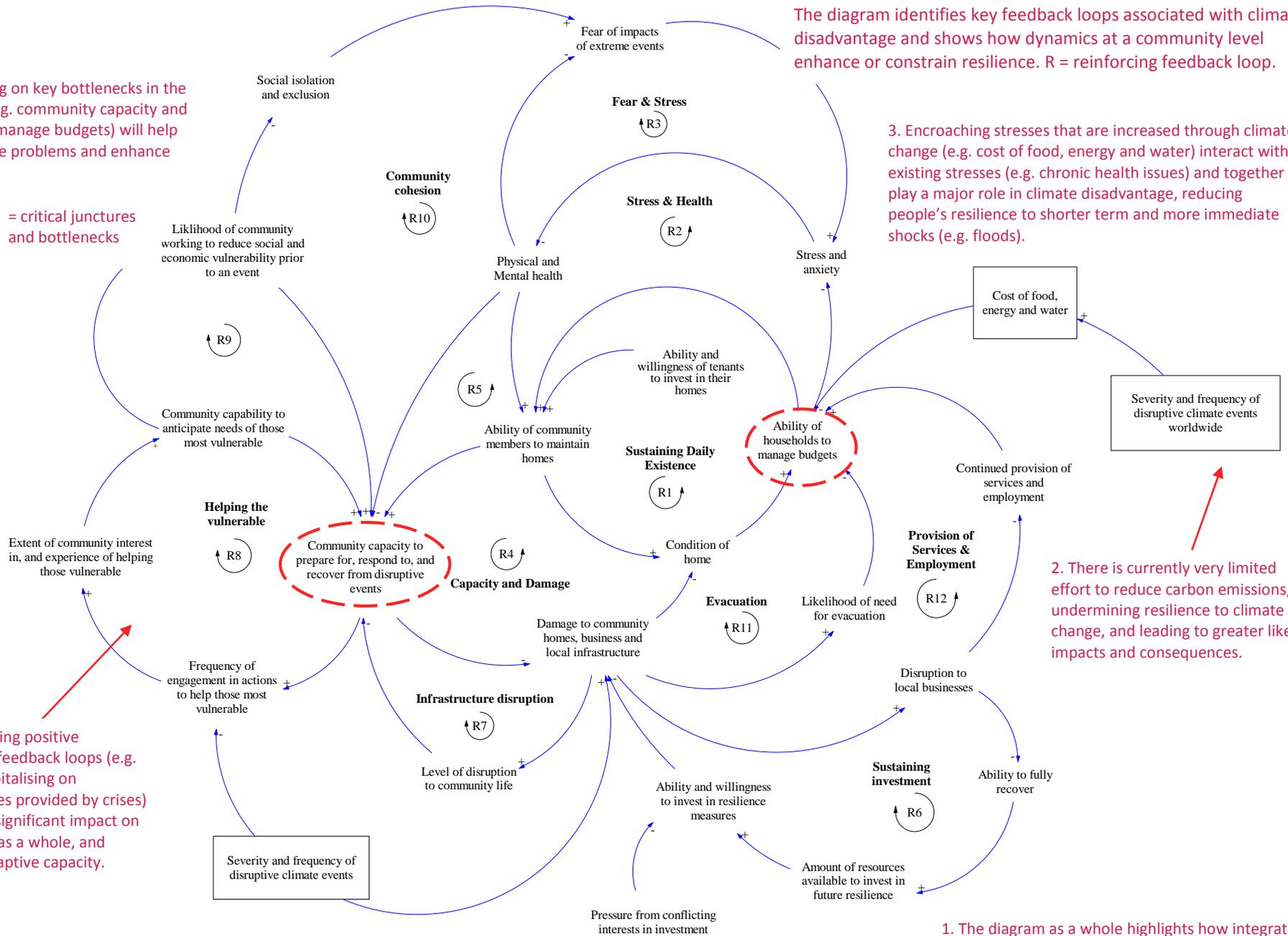
1. The diagram as a whole highlights how integrated different components of the system are. Yet many approaches to working in communities do not work in an integrated manner.

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

Fear of impacts of extreme events

Social isolation and exclusion

Fear & Stress
R3

Community cohesion
R10

Stress & Health
R2

Liklihood of community working to reduce social and economic vulnerability prior to an event

Physical and Mental health

Stress and anxiety

Cost of food, energy and water

R9

Community capability to anticipate needs of those most vulnerable

Ability and willingness of tenants to invest in their homes

R5

Ability of community members to maintain homes

Sustaining Daily Existence
R1

Ability of households to manage budgets

Severity and frequency of disruptive climate events worldwide

Continued provision of services and employment

Helping the vulnerable
R8

Extent of community interest in, and experience of helping those vulnerable

Community capacity to prepare for, respond to, and recover from disruptive events

Capacity and Damage
R4

Condition of home

Evacuation
R11

Likelihood of need for evacuation

Provision of Services & Employment
R12

Frequency of engagement in actions to help those most vulnerable

Damage to community homes, business and local infrastructure

Disruption to local businesses

Infrastructure disruption
R7

Level of disruption to community life

Ability and willingness to invest in resilience measures

Sustaining investment
R6

Ability to fully recover

Severity and frequency of disruptive climate events

Pressure from conflicting interests in investment

Amount of resources available to invest in future resilience

Lessons about enhancing community resilience to climate change in practice

The SBCRC project sought to learn by developing resilience in practice in three localities in the Scottish Borders. A number of key lessons were identified that are relevant to those interested in implementing and supporting community resilience initiatives.

Community resilience is a complex, social process

Different participants experienced the project in different ways, depending on their perceived needs and expectations, prior experience and their role or participation in the project. Examining these different experiences highlighted that building community resilience:

- is a complex social process;

- involves negotiations of power and control;

- includes individuals that may take on diverse roles within the process (e.g. local residents, community groups, local authority teams, local NGOs);

- can contribute to the formation of new, or strengthen existing, groups or working relationships across organisations and interests;

- can contribute to greater shared understanding of objectives and goals;

- can be experienced as a process of bringing together different interests, focus and capacities and individuals working to different time frames, agendas and expectations;

- requires time to be developed and sustained.

In addition to the complexities of managing resilience as a social process, other factors influenced the type of outcomes seen in each area, including the influences of local context (e.g. expertise available, or level of interest), critical challenges (e.g. time and resources) and how opportunities were utilised, such as aligning activities with existing initiatives or turning crises into opportunities (e.g. working with the increased interest in community resilience following floods that occurred during the project to enhance engagement in longer term considerations).

What does this mean for building community resilience in practice?

Working with the complexities, challenges and opportunities in local contexts requires purposeful design and implementation of initiatives (Figure 2). Some of the most critical aspects of the design and how the project was approached included:

- taking a holistic approach to integrate and work across diverse issues;

- viewing resilience building as an ongoing process and focusing on diverse types of outcomes, including capacity building and learning, in addition to more tangible goals;

- participatory approaches that are flexible to the needs of different participants;

- explicitly focusing on climate change, but in a way that was clearly linked to local issues.

Having a direct focus on climate change is important for:

- engaging participants in conversations to enhance understanding about how climate change will impact individuals, localities and communities;

- encouraging consideration of the need to reduce carbon emissions, which in the long term is a critical part of enhancing resilience to climate change;

- enhancing understanding of the systemic nature of the problem to ensure holistic and innovative solutions are developed;

- encouraging integrated approaches for joined up action (e.g. adapting to flooding through implementing flood measures that also reduce carbon emissions by incorporating renewable energy generation into the schemes);

The project also included critical tensions that need to be navigated when building community resilience (Table 1). These tensions provide a useful focal point for discussions with team members when delivering projects to help identify differences in expectations and assumptions.
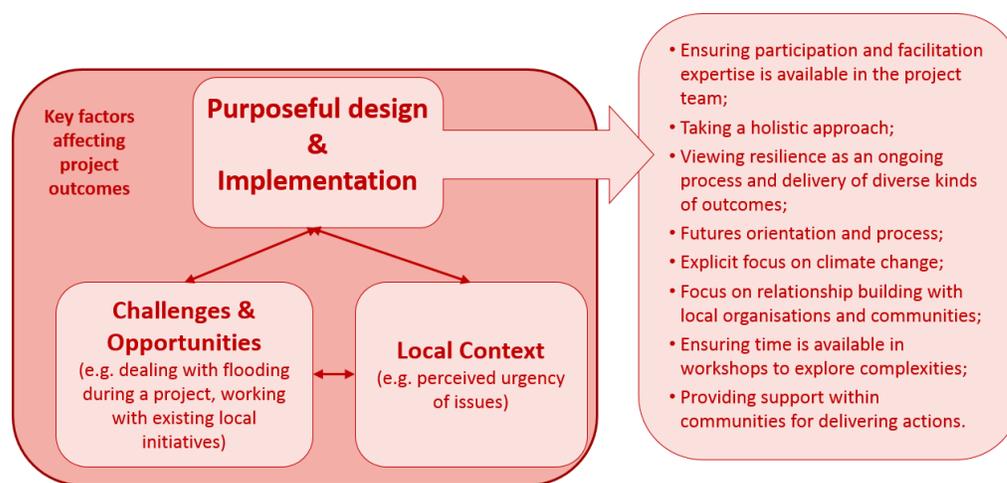

Figure 2: Important factors for the design and implementation of community resilience initiatives

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

Table 1. Tensions in approaches to community resilience projects. These can be used as a focal point for discussions between project team members to identify expectations and underlying assumptions about project delivery.

National policy messages

The national policy landscape is important for shaping the framework, resources available and parameters for action at the community level for building community resilience to climate change. Sixteen dimensions were identified relating to four key policy facets which would strengthen and create a more integrated and synergistic national policy landscape in Scotland to enhance community resilience to climate change (Figure 3). These were identified by experts from different policy sectors and by drawing on the findings from the work in local communities.

Facet 1: Resilience through spatial planning

Rebalancing the priority for economic growth and aligning other planning policy goals (e.g. building design standards and protecting the historic environment) with the need to improve community resilience to climate change.

Facet 2: Strengthen community capacity

Developing the capacity within communities to bring different people, their skills and knowledge together, to examine a range of different but interconnected local issues and decide how to improve resilience within specific local contexts.

Facet 3: Better coordination across levels of governance (from the local to the national) and across organisations

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

Facet 4: Adopt a holistic approach for community resilience

Providing strategic leadership and direction that explicitly promotes community resilience as a priority, which involves connecting different social groups, issues and considering the broader spatial and temporal scales in policy and practice and learning from other policy domains/ issues.

Integrating policy

A more integrated national policy landscape could help to support community resilience, especially where resources are limited, such as by bringing disparate capacities and resources together. While calls for greater policy integration are not new, a more explicit focus in policy on building community resilience in the context of climate change across different policy domains could help to ensure that actions in one area improve outcomes overall. A greater focus on building community resilience to climate change also potentially provides a useful way to deliver greater policy integration and positive outcomes at the community level.
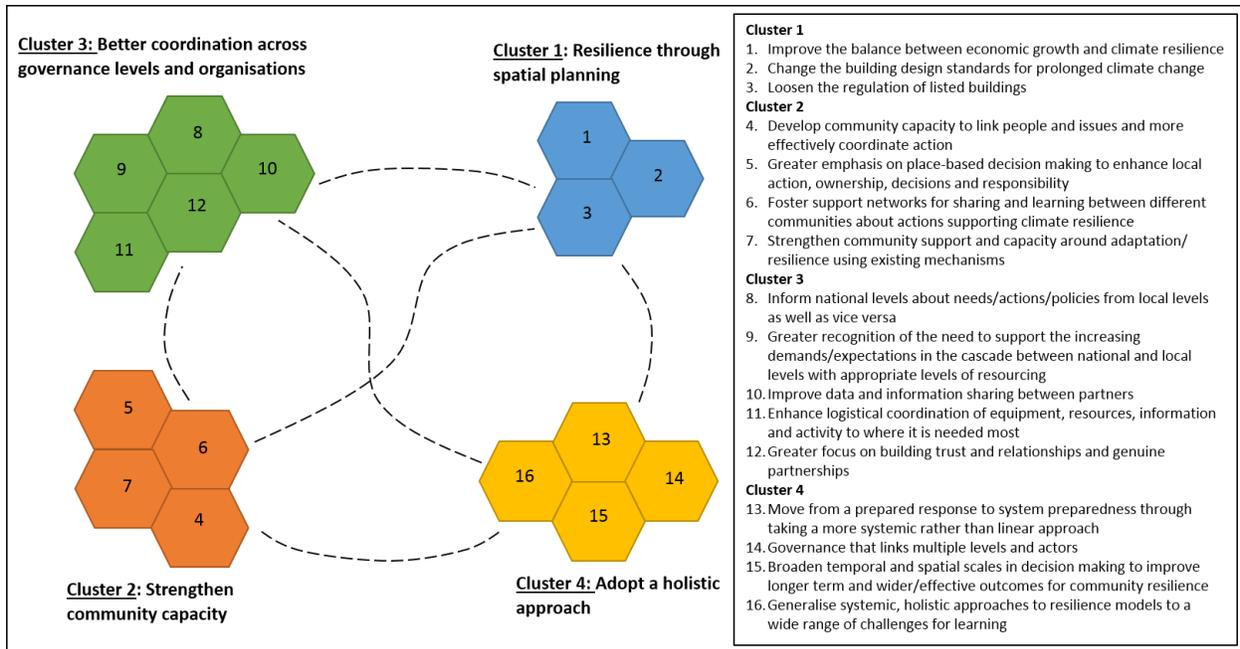
Cluster 3: Better coordination across governance levels and organisations

Cluster 1: Resilience through spatial planning

Cluster 2: Strengthen community capacity

Cluster 4: Adopt a holistic approach

Cluster 1
1. Improve the balance between economic growth and climate resilience
2. Change the building design standards for prolonged climate change
3. Loosen the regulation of listed buildings

Cluster 2
4. Develop community capacity to link people and issues and more effectively coordinate action
5. Greater emphasis on place-based decision making to enhance local action, ownership, decisions and responsibility
6. Foster support networks for sharing and learning between different communities about actions supporting climate resilience
7. Strengthen community support and capacity around adaptation/ resilience using existing mechanisms

Cluster 3
8. Inform national levels about needs/actions/policies from local levels as well as vice versa
9. Greater recognition of the need to support the increasing demands/expectations in the cascade between national and local levels with appropriate levels of resourcing
10. Improve data and information sharing between partners
11. Enhance logistical coordination of equipment, resources, information and activity to where it is needed most
12. Greater focus on building trust and relationships and genuine partnerships

Cluster 4
13. Move from a prepared response to system preparedness through taking a more systemic rather than linear approach
14. Governance that links multiple levels and actors
15. Broaden temporal and spatial scales in decision making to improve longer term and wider/effective outcomes for community resilience
16. Generalise systemic, holistic approaches to resilience models to a wide range of challenges for learning

Figure 3. Policy facets for a more integrated and synergistic policy landscape to improve community resilience to climate change

Conclusion

Climate change is a symptom of the current ways in which society is structured and organised. As such, major societal change is likely as shifts towards low carbon economies occur. Climate change is also a stress multiplier, potentially worsening existing challenges, including the consequences of climate change, such as more frequent and severe extreme weather and inequalities within communities. Building community resilience in this context is thus a complex process of social change that requires concerted efforts to shape goals, identify common ground and mobilise disparate capacities and resources. Achieving such change requires a much more explicit focus on holistic approaches that galvanise local action and stimulate ownership and responsibility for climate change across different levels of governance. Silo thinking is no longer an option and risks producing piecemeal and ineffective solutions, or even reinforcing existing problems. Instead, strategic action is needed to address key bottlenecks to enhance community capacity for resilience and help families manage household budgets, while also seriously engaging with challenging the underlying assumptions, values, and norms that give rise to climate change. These actions need support from more integrated policy landscapes that strengthen spatial planning; support capacity building; enhance coordination across levels of governance; and which provide strategic leadership to promote the building of community resilience to address the climate challenge.