



Community resilience to climate change: an evidence review

by Clare Twigger-Ross, Katya Brooks, Liza Papadopoulou, Paula Orr, Rolands Sadauskis, Alexia Coke,
Neil Simcock, Andrew Stirling and Gordon Walker

How is the resilience of communities to climate change in the UK currently understood and practised? The concept of community resilience to climate change in the UK has a diverse range of meanings and associated activities. This review of evidence and practice explores this varied and contested field to build the evidence base and help support the development of community resilience to climate change.

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The report shows:

- the range of definitions of resilience to climate change across policy, academia and practice;
- the variety of actions being carried out across the UK that can be classed as improving resilience of communities to climate change;
- the barriers and facilitators to improving resilience to climate change for communities;
- the value of a framework to understand resilience of communities to climate change that emphasises existing capacities of communities, engagement and empowerment of citizens, and multi-level governance; and
- examples of innovative actions to improve resilience of communities to climate change with a focus on four case studies.

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Executive summary

The meanings, applications and implications of the concept of ‘resilience’ are contested, varied and not well understood in the context of UK climate change action. To address this and thereby support the development of community resilience to climate change, the Joseph Rowntree Foundation (JRF) commissioned a review of the research exploring the relationship between community action on climate change in the UK and the broader evidence-base around resilience.

Investigating community resilience to climate change

The project used a systematic evidence-review strategy, screening and classifying studies to identify 108 high-quality documents for detailed analysis, combined with input from a range of experts together with a workshop for key stakeholders. The review focuses on evidence and practice around climate change resilience at the community level, but also has a focus on three key areas of action: flood risk management, food growing and community energy. Four short case studies of community actions addressing climate change consequences were undertaken, alongside consultation with the JRF Climate Change and Communities Programme Advisory Network (March 2015), to understand emerging practice in more depth (through document review and a small number of in-depth interviews). The review examines the following key issues:

- the concept of community resilience to climate change: what the term means and how it is used in research, policy and practice;
- what key factors create community resilience to climate change;
- the nature of emerging practice;
- factors that may support or hinder the development of community resilience to climate change;
- the roles of different stakeholders in supporting this; and
- the relationship between vulnerability and resilience.

What does the concept of ‘community resilience to climate change’ mean?

No commonly agreed definition of ‘community resilience’ in the context of climate change action in the UK was evident from the review, and its contested nature is also clear. However, there are a number of definitions of resilience that have similar core concepts. Drawing on the evidence, the concept can be broadly summarised as: the ability of communities to reduce exposure to, prepare for, cope with, recover better from, adapt and transform as needed to, the direct and indirect effects of climate change, where these effects can be both shocks and stresses.

This definition introduces a number of important terms, described in Box 1.

Box 1: Unpicking the concept of community resilience in the context of climate change

- **The direct effects of climate change** can be seen as direct impacts, such as increased flooding and heatwaves, that are expected to arise due to global warming.
- **The indirect effects** include less obvious issues that may be a result of these impacts, such as increased food prices due to food shortages in certain areas where extreme temperatures and extreme weather cause crop failure.
- **Shocks** can be seen as short-term events with immediate impacts such as flash floods, while **stresses** tend to occur over a longer time frame as enduring problems, for example potential longer-term impacts on housing markets from changes in local flood risk and insurance pricing.
- There is also a distinction between 'proactive' and 'reactive' resilience: **proactive** emphasises adaptation and transformation; **reactive** focuses on resistance and 'bounce-back'.

Academic definitions suggest a key component to successfully building resilience is to understand and develop the capacities within a community. This review builds on Cutter *et al.*'s (2010) model for categorising community resilience capacities/resources. Its five categories of resilience capacities are: social, institutional, infrastructure, economic and community capital.

The review examines examples of action through this lens of 'community resilience' to assess how far current action in the UK is increasing community capacities, and may ultimately be building resilience to the direct and indirect effects of climate change in the long term. It suggests that to be effective, emphasis needs to be on proactive approaches to building long-term resilience to climate change consequences.

How is the term used in practice?

While popular in some academic fields (e.g. within disaster management and development) and within policy, the concept of 'resilience' has not been a core driver of community action. Instead, community actions more often employ the terms 'sustainability' or 'self-sufficiency'. If 'resilience' is considered, climate change may not be the main focus. There are exceptions, such as the Transition movement and some national funders of community action.

How is community resilience to climate change framed at the policy level?

Currently, the policy focus in relation to community resilience to climate is generally on direct shocks due to extreme weather events, rather than longer-term stresses, leading to an emphasis on emergency planning and the role of the community linked to other institutions in supporting responses. This emphasises a predominantly reactive approach.

Other areas of policy are directed towards tackling indirect shocks and stresses relating to climate change, but they are framed as climate change mitigation rather than as supporting community resilience (for example, the Low Carbon Communities programme and the Community Energy strategy). In addition, there is work on adaptation primarily driven through the National Adaptation Programme led by the Department for Environment, Food & Rural Affairs (Defra).

Capturing emerging practice that supports community resilience to climate change in the UK

It is difficult to capture and provide a comprehensive account of all emerging practice, as community action to address climate change in the UK is diverse, yet patchy, and fragmented. Community groups and local projects vary greatly in size, formality and stage of development. Activities on different aspects of the agenda will overlap and the number of initiatives is not static; indeed, it is constantly in flux. This echoes the patchwork of community resilience definitions.

Limited evidence was found on community action to address water scarcity and heatwaves; far more evidence exists around flood risk management, energy (efficiency and renewable energy generation), and food growing. This may reflect that these are issues where UK citizens have the most direct experience and responses are more formally organised. In addition, community food growing and energy initiatives are often motivated by concerns other than climate change.

Factors that support the development of community resilience to climate change

The paucity of evaluations and different framings of issues mean that understanding the key drivers of community resilience to climate change is not straightforward. However, evidence points to the importance of:

- framing agendas broadly: community action that can stimulate resilience to climate change is motivated by a range of factors, including concerns about climate change, but there are also other motives. To engage communities, the framing of initiatives should go beyond climate change to incorporate actions that address a community's wider priorities, and that cultivate skills, understanding and ownership of responses to climate change, as well as other issues;
- existing capacities within a community: it is important to understand the starting point and the capacities that already exist in a community, to inform action on climate change resilience. Community capital (links between citizens, social networks) and institutional capacity (formal and informal organisations, together with links between them) seem to be particularly crucial; and
- support from the community (e.g. residents' associations) and voluntary organisations (e.g. the National Flood Forum) to act as intermediaries: to provide guidance and stepping stones for forming a new partnership aimed at developing community climate change resilience, and supporting skills and knowledge exchange.

Roles of different stakeholders in facilitating community resilience to climate change

The value of pre-existing capacities and knowledge cannot be underestimated, especially in the current political climate where responsibility is being devolved from the national government down to a local level (community and local authority). This is alongside cuts in spending and staff in local authorities, making reliance on community members to initiate and lead actions much greater. This has implications for the extent to which actions focus on those who are most climate disadvantaged.

- **Civil society organisations:** under the UK Government's localism agenda, civil society organisations,¹ such as non-governmental organisations (NGOs) and community organisations, have an increasingly important and wide-ranging role in response to climate change consequences, but financial and human resources are limited. They have a key role as intermediaries between people, government and organisations, facilitating public engagement and dialogue, and strengthening partnership working.
- **Local government:** the review suggests that the ability of local authorities to lead actions to address climate change consequences has been limited by the lack of a statutory requirement to address climate change, capacity and funding.
- **National government:** there is a role for government to develop a strategic national framework for action on resilience to climate change that addresses climate vulnerability, builds on community capacities, outlines a joined-up approach across government departments and agencies, and increases coherence in policy. Specifically, policy around emergency responses should be considered in relation to adaptation to climate change, so that community action is appropriate and co-ordinated.
- **Local citizens:** there is an essential role for individual citizens to drive community resilience. Frequently, it is the commitment and capacity of citizens that enables the development and

maintenance of community resilience activities. However, the review shows that for this to be successful, it needs to be linked to formal governance structures and networks. This linking can provide a useful challenge to formal institutions, showing how radical solutions work in practice, as well as providing key connections to the lived experiences of community resilience.

Effective governance of community action in relation to building resilience to climate change is flexible and in touch with local realities, and part of strategic approaches to climate change at the national level. Intermediary organisations and partnership/multi-agency working that develops links and involves strong, committed, confident and proactive stakeholders with a shared agenda can offer and develop community resilience capacities. A joined-up approach between grassroots and top-down interventions would help to ensure long-term community resilience, and that climate vulnerable areas are addressed.

The relationship between vulnerability and resilience

Resilience is about drawing on, as well as building, capacities, and should not reproduce social vulnerabilities. Resilience as 'bounce-back' in the context of shocks is not enough for longer-term management of climate change, particularly if high levels of vulnerabilities exist in a locality. Vulnerability is a function of the exposure and sensitivity of a system, and:

Vulnerability is the pre-event, inherent characteristics or qualities of social systems that create the potential for harm... Resilience is the ability of a social system to respond and recover from disasters and includes those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change, and learn in response to a threat.

Cutter et al. 2008

The review recognises that social vulnerability of communities to the effects of climate change is not just the opposite of resilience. It is possible for a person or community to be vulnerable to shocks and stresses in some ways, yet resilient in others through having capacities to adapt or overcome that vulnerability.

A lack of national strategy to build community resilience to climate change makes it less likely that areas of climate vulnerability are prioritised and targeted. Those areas with high social vulnerability are also likely to have lower levels of pre-existing capacities that could support climate change resilience. Therefore the most vulnerable areas, both socially and in terms of climate change, may be the least likely to develop community-led resilience actions, which could lead to future problems if they are hit by the consequences of climate change. This is a key area for future research and action.

Key recommendations

Local authorities

- Local authorities could use areas of statutory work, e.g. on flood risk and energy, to grow community resilience to a wider set of climate change issues. Furthermore, other policy agendas such as spatial planning and health could be an important route for developing clearer local climate resilience strategies and actions, e.g. to enable green infrastructure as part of efforts to support vulnerable communities, or developing heatwave plans for care homes.
- They could recognise and develop a role linking formal and informal processes of governance (e.g. between local councils and voluntary and community groups) and develop approaches to partnership-working that allow for grassroots and intermediaries' involvement, e.g. working with the Transition movement, or the National Flood Forum.
- Initial funding is a key factor for the success of community climate change resilience initiatives. In a context of shrinking local authority budgets, developing multi-stakeholder partnerships can facilitate access to alternative sources of funding.

- Community capacity, skills and networks are crucial components of resilience to climate change, and to wider shocks and stresses. Local authorities can help build this by recognising the value of community-led actions across departments, involving representatives in multi-agency meetings, and promoting links between community organisations and institutions with responsibilities for climate action.
- Local authorities could identify people and places that face high social vulnerability to the consequences of climate change, and facilitate partnerships to carry out actions to support the most vulnerable communities in developing resilience.

National government

- Overall, 'Central Government needs to provide stronger leadership on climate change adaptation to increase its political visibility and urgency amongst local government' (Porter *et al.*, 2015).
- Central government could develop a cross-government definition and approach to community resilience in the context of climate change that goes beyond emergency planning, includes a proactive focus, and clarifies the roles of different stakeholders.
- It should further develop working across Defra and the Department for Communities and Local Government (DCLG) on flooding, and Defra and the Department for Energy and Climate Change (DECC) on energy and climate change, and link in Department for International Development (DFID) thinking for the next Climate Change Risk Assessment and National Adaptation Programme.
- It could also recognise that to achieve the goals of building community resilience to climate change requires a clear vision of the role of local authorities as enablers of community action on climate change, alongside the voluntary sector and members of local communities.
- It should focus programmes of grants on areas of social vulnerability and climate hazard exposure. For example, it could consider establishing a resilience funding stream with a clear evaluation programme to ensure progress is assessed.
- Central government needs to join-up policy on community resilience to climate change by looking at opportunities for resilience-building in the context of:
 - measures focusing on mitigation or indirect shocks and stresses relating to climate change, for example, the Community Energy strategy and energy efficiency measures, or other social interventions; and
 - emergency planning responses, where a longer-term, more proactive approach to prepare and adapt to climate change is also needed.
- For the widest range of civil society organisations to participate, the government needs to support the sector to create a national infrastructure that:
 - provides information on funding opportunities and best practice to local service providers, and facilitates dialogue between all parties about needs, priorities, service design and delivery;
 - assists in the formation of bidding consortia, to ensure that civil society organisations of all sizes benefit from opportunities to tender for services; and
 - helps service providers to demonstrate impact by providing information on measurement tools and frameworks.

Communities

- Communities can evaluate their capacities (strengths and weaknesses) and start from those points to develop new capacities in relation to climate change resilience. They can learn from existing initiatives about how to make the most of available resources, potential pitfalls to look out for, and solutions.
- They should start activities that develop community participation and networks, but have a longer-term vision, as well as building on local interests to develop interest and engagement. This may not always require a specific focus on climate change. Actions that start by dealing with a community's

daily concerns and aim to increase community well-being can be more appealing than a specific climate change focus.

- Making links with key local institutions, e.g. local government, is key to developing common goals and influencing local agendas, sharing learning, and garnering input and support. Communities need to understand the focus of the local council and frame activities to make connections with their agendas.
- Building in ways to monitor and evaluate community action from the start will help to generate evidence of impact and benefits, and to share learning and best practice.
- It is important for communities to recognise that:
- actions to build resilience are likely to take longer than anticipated; and
- it is not necessary to be an expert on climate change to increase a community's climate change resilience; other initiatives, such as reclaiming green space for community uses and promoting local food production, are excellent ways of building community capacities and developing resilience.

1 Introduction

The Joseph Rowntree Foundation (JRF) commissioned Collingwood Environmental Planning (CEP), in collaboration with Professor Gordon Walker and Dr Neil Simcock (Lancaster University), Dr Alexia Coke (independent researcher) and Professor Andy Stirling (University of Sussex), to undertake an evidence review on community resilience to climate change as part of the *Climate Change and Communities* programme. The research was undertaken between July 2014 and May 2015.

Understanding what works at the community level to build resilience to climate change, in terms of mitigation of shocks and adaptation to stresses, remains a complex challenge for UK policy and practice. This complexity is characterised by a number of key issues: defining 'resilience', having a clear idea of resilience 'to what', and understanding what is being sustained or transformed. Implicit and explicit framings of resilience shape both policy and practice; therefore this report builds on the existing evidence to consider the different definitions of the concept of resilience, and to clarify how those affect policy and practice.

In the context of climate change, people's adaptive capacity in terms of their ability to prepare for, respond to and recover from climate impacts, is critical in understanding both social vulnerability and resilience. This report focuses on the resilience of individuals and communities to both shocks and longer-term stresses of climate change, to explore how resilience can be conceptualised and put into practice. This is to support local organisations and communities in responding to climate change beyond a crisis context, with a more transformative approach to help prepare different groups for a more sustainable future.

Aims and objectives of the project

1. To explore the concept of resilience in the context of climate change, drawing on literature from other fields and countries where relevant, and considering both local area resilience and, specifically, community resilience, and how the two might relate.
2. To identify key components of resilience and what factors may support or undermine resilience in different contexts.
3. To identify existing and emergent practice in relation to responding to the challenges posed by climate change (including both mitigation and adaptation examples), including community-led approaches and local actions developed in partnership across different organisations working with communities.
4. To consider how policy and practice can support the development of greater local resilience in the face of climate change.

Research questions

The original project specification provided the following research questions for the evidence review:

1. What are the key components of the resilience of communities to climate change shocks and stresses? What can we learn from the concepts and applications of the resilience of communities in other fields that could support the development of the resilience of communities in the face of climate change?
2. What factors support/undermine the development of community resilience in the face of climate change?
3. What are the roles of different stakeholders in developing resilience, considering, in particular, communities and local authorities?
4. What is the relationship between community resilience and:
 - a. wider institutional and societal resilience?

- b. the resilience of physical infrastructure in different localities?
 - c. social and spatial vulnerability to climate change?
5. What practice is emerging that may be supporting resilience at a local level to:
 - a. address the direct consequences of climate change (e.g. flooding, heatwaves and drought)?
 - b. support the transition to a low-carbon economy and society (e.g. through reductions in local energy demand, shifts in supply, increases in energy efficiency and community energy schemes)?
6. What is the relationship between vulnerability and resilience in the context of climate change?
7. What does existing evidence and emerging practice tell us about the current picture of resilience to climate change at the local level in the UK, and how this could be enhanced in different contexts?

This is a challenging set of questions. As the review proceeded, it was clear that the amount of evidence available for each question was variable, and this is reflected in the reporting of the findings.

Report outline

The report is structured as follows:

- **Chapter 1: Introduction.**
- **Chapter 2: Context – policy, community and climate change.** This section provides an overview of relevant policy and sets out the consequences of climate change at a community level, and the effects on and actions of communities to build resilience.
- **Chapter 3: Methodological approach.** This section briefly outlines the methodological approach, including the processes employed to develop the search and analysis strategy of documents for inclusion in the evidence review, to identify four case studies of practical and innovative approaches to community resilience to climate change, and to synthesise and analyse qualitative data.
- **Chapter 4: The case studies in brief.** This section gives an overview of the case studies that were developed as part of the project, in order to provide context for later discussions.
- **Chapter 5: Considering resilience perspectives.** An overview of academic, policy and practitioner approaches to resilience in the context of communities, disasters and climate change is provided in this section. It concludes with a framework that is used to examine the evidence on community actions on climate change.
- **Chapter 6: The wider view: emerging practice that supports community resilience to climate change.** This section explores the extent of community action in the UK that is attempting to build community resilience to climate change or is linked to climate change, how those involved are interpreting the concepts of community resilience, and what is being done in practice.
- **Chapter 7: Factors that support or undermine the development of community resilience.** This section looks at how different social, economic and institutional conditions affect the development of locality and community resilience in the face of climate change.
- **Chapter 8: Governance and the roles of different stakeholders in developing community resilience.** This section looks at governance partnerships and modes, and different stakeholders' roles, capacities and strengths, relationships and interactions in the development of community resilience.
- **Chapter 9: The relationship between vulnerability and resilience.** This section explores the relationship between vulnerability and resilience of communities, in literature and practice.
- **Chapter 10: Conclusions and key messages.** This section draws out general lessons useful for developing future community resilience initiatives and refining current activities, and for addressing the particular needs of disadvantaged groups. It sets out key messages for different stakeholders, including national and local government, and communities.

2 Context: policy, community and climate change

Climate change is one of the greatest risks facing society. Increases in the intensity and frequency of extreme weather events (global rainfall patterns, temperature and wind) will be experienced in a number of ways: 'such profound changes to the climate will have multiple impacts on human society' (Preston *et al.*, 2014). The main consequences of climate change that communities in the UK are likely to experience include: increased flooding, heatwaves, drought, coastal erosion, sea-level rises and storm surges (Preston *et al.*, 2014; Defra, 2012a). These are commonly referred to as the 'direct' consequences of climate change.

'Indirect' consequences of climate change that UK society is likely to experience are: risks to food and energy security; fuel poverty; rising costs of living (including the effects of increasing flood insurance premiums, energy bills and food prices); demands for new infrastructure and renewable energy schemes; loss of property, possessions and livelihoods, etc. (Preston *et al.*, 2014; PwC, 2013). Evidence suggests that indirect social impacts 'resulting from climate change elsewhere in the world may be as significant, if not more so than direct impacts at home' (Foresight, 2011).

This evidence review takes the view that community resilience to climate change is not only concerned with the direct and indirect consequences of extreme weather, but also the wider social consequences of climate change, relating to the physical and mental health, and wider well-being, of UK society. As SNIFFER (Chalmers *et al.*, 2009) state:

It will also affect people's access to, and the quality of, basic goods and services such as water, shelter and food, as well as other key priorities for human wellbeing such as education, employment and crime, therefore worsening social deprivation.

As a result, UK society will experience 'shocks' from the direct consequences of extreme weather (e.g. immediate damage to homes from floods) and 'stresses' from indirect, cumulative and longer-term effects (e.g. changes to the costs of living if food prices rise due to climate change, or if policy responses to reduce carbon result in higher household energy bills).

Further indirect effects that, although more removed, may prove even larger in their consequences, include the effects of war or pandemic engendered by international tensions or disruption consequent to climate change (Matthew *et al.*, 2010; Dodds *et al.*, 2009; Barnett and Adger, 2007; McMichael, 2003).

Some places, communities and social groups are likely to experience the effects of these threats disproportionately and unequally (Preston *et al.*, 2014). Climate justice research has found that the community groups that are most vulnerable to the consequences of climate change are also those who produce least in terms of emissions. Typically, these include: elderly people; deprived communities with low incomes, poor housing quality and limited mobility; people living in rented accommodation; people living in places at risk; and communities that lack awareness of the risks of climate change, or the capacity to adapt (Chalmers *et al.*, 2009, Lindley *et al.*, 2011).

Although there is a broad consensus around the consequences of climate change, the policy response in the UK is less clear-cut. The UK was one of the first countries to have a Climate Change Act (2008) and a National Adaptation Programme focused on addressing the consequences of climate change, suggesting a strong direction from central government. However, in 2010, the UK Government launched the localism or 'Big Society' agenda:

[...] it is time for a fundamental shift of power from Westminster to people. We will promote decentralisation and democratic engagement, and we will end the era of top-down government by giving new powers to local councils, communities, neighbourhoods and individuals.

Cabinet Office, 2010

This agenda has had two important impacts in relation to climate change:

- Local authority requirements to report against national indicators ended: between 2008 and 2010 there were national performance indicators on carbon emissions reductions and climate change adaptation for local authorities. Instead, much of what is in place now is voluntary.
- Responsibility for action (including on climate change) has been shifted onto communities and voluntary organisations (collectively known as ‘civil society’):

The government is supporting people who care about their communities and want to get involved in improving them. It believes that people understand the needs of their area best, which is why it is transferring power so people can make more decisions locally and solve their own problems to create strong, attractive and thriving neighbourhoods.

UK Government, 2015

From the outset, the concept of the Big Society has been critiqued as a thinly-veiled attempt to reduce the role of the state and devolve responsibilities for action to the community level. With respect to climate change and its challenges, calls for community resilience at the local level and for people to take responsibility for flood risk, for example, have been challenged as an ‘appropriation of the climate challenge by neoliberalism’ (Henfrey and Kenrick, 2015). And while use of the term ‘resilience’ has increased over the past decade within the UK Government and more widely, it is contested, with some suggesting that a resilience framing shifts the approach away from addressing societal vulnerability to climate change (Cannon and Muller-Mahn, 2010). See Chapters 5 and 9 for further discussion.

This shift towards localism is taking place in the context of major cuts to public sector budgets. The cuts implemented to date have led to ‘a 27 per cent reduction in the spending power of local authorities in England between 2010/11 and 2014/15. Local authorities with greater concentrations of disadvantaged population groups have suffered faster and deeper cuts, particularly those in urban areas’ (Hastings *et al.*, 2015). As the findings of Porter *et al.* (2014) of the University of Leeds show, these cuts have affected the progress in adaptation by local authorities (LAs) in the UK:

After five years of budget cuts by the current Coalition Government, LAs have few resources and little appetite for undertaking adaptation actions that are not directly relevant to their core statutory futures. In this context LAs are focused on immediate concerns, and adaptation to future climate change is no longer a priority.

As Brisley *et al.* (2012) suggest, action on climate change adaptation at this level is not solely the responsibility of local authorities: ‘it is important that housing and health organisations, as well as the emergency services and voluntary and community sector organisations, contribute to just adaptation’.

The budget cuts and devolution of responsibility for public service delivery have significant implications for the voluntary and community sector (VCS) and civil society, and their role in climate change action. Chief Executive of the National Council of Voluntary Organisations’ (NCVO), Sir Stuart Etherington (2011), has expressed concerns:

Nearly three quarters of the funding that our sector receives from the state is in the form of contracts to deliver services... it is the state that is dependent on us, for a whole range of services and support that are essential for the wellbeing of people and communities... which is why the scale and speed of the cuts is of such concern.

This all points to a number of key contextual issues for this report’s investigation of the evidence and practice of community resilience to climate change consequences, and transitions towards a low-carbon society:

- the breadth and nature of consequences of climate change will hit different localities and communities unequally;
- the existing local context and levels of social vulnerability are likely to affect how far communities can respond to these challenges; and
- the policy context is one of increasing expectations for local action and self-reliance, but at the same time institutional capacity is diminishing, while communities will have differing levels of capacity to take up and respond to the challenge.

3 Methodological approach

This section briefly outlines the methodological approach taken for the evidence review, including the processes employed to: develop the search and analysis strategy of peer-reviewed and grey literature for inclusion in the evidence review; identify four case studies of practical and innovative approaches to community resilience to climate change; and to synthesise and analyse primary and secondary qualitative data concerning community action.

The project was designed to build on previous work on resilience and emerging community action in the context of climate change. The aim was to provide a solid base from which to examine how the concept of community resilience is being defined and used in different contexts (policy, practice and research); the factors that support or undermine capacities to build resilience at the community level; and the relationship between resilience and equity, social disadvantage and vulnerability. That is, questions of resilience 'to what' (e.g. shocks or stresses), 'of what' (e.g. communities, localities, etc.) and particularly 'for whom' (i.e. who is likely to benefit, and who may be excluded).

To gain the necessary insight and deeper understanding about the approaches, relationships and processes at work, the evidence review draws on qualitative and quantitative data from the following sources:

- Documentary evidence: an online search of documentary evidence.
- Expert evidence: input from four expert advisors and 16 workshop participants with different fields of specialisation.
- Action evidence: four case studies based on in-depth telephone interviews with a minimum of two stakeholders in each case, alongside documentary analysis.

Strategy for the online search of documentary evidence

To ensure that the evidence review drew on a comprehensive and balanced evidence base of relevance to the research questions, a dual approach was employed: the use of expert knowledge and understanding of key issues for this topic area, alongside a systematic search of electronic databases.

Guided by the research questions and discussion at the inception meeting, the initial inclusion and exclusion criteria for evidence (outlined in Appendix 1) were identified, to manage the search and develop a search string that was purposely restricted to produce relevant results. This included online searches of the following electronic databases: Web of Science, Scopus, Google and Google Scholar. Alongside this process, project advisors identified high-quality, core additional peer-reviewed papers and grey literature.

Quality assurance

Good processes, including regular moderation, were established to ensure that the project team took a consistent approach to applying inclusion and exclusion criteria, coding and reviewing documents (EPPI-Centre, 2010).

Full text papers were reviewed against a set of quality assessment criteria (both quantitative and qualitative) developed by CEP, and the results recorded in a proforma (see Appendix 2). Only those documents chosen through the quality assessment criteria, and judged by the experts and project team to be most relevant, were taken forward to use in the analysis and synthesis of evidence.

The search strategy gathered 995 studies and these were filtered down to 87. Exploration of the evidence and input from project advisors and workshop participants resulted in a final 108 documents that were quality assessed and included in the evidence review (more details in Appendices 1–3).

Focusing the evidence

The initial findings from the online search of documentary evidence, together with input from the expert advisors and workshop participants, provided a view on the scale of action across the UK. This led the evidence review and case studies to focus specifically on exploring community resilience through action on community energy (generation and efficiency), community flood risk management and community food growing. The review of evidence found that the focus of documented examples of community actions to address the consequences of climate change in the UK is not evenly spread: more examples of community actions were found relating to the three areas given above, but limited examples were found relating to water scarcity and heatwaves.

Community actions in these areas combine a focus on the direct and indirect consequences of climate change. They offer the potential to explore distinctions between proactive and reactive community resilience to climate change, and issues around addressing shorter-term crises, or 'shocks', and longer-term, more enduring pressures, or 'stresses'. For example:

- **Community flood risk management** can build community resilience to prepare for the shock of a flood and to alleviate potential long-term stresses. A flood event itself is a shock, where preparatory actions can support responses and immediate recovery. But flooding will also generate longer-term stresses, for example, relating to increases in the price of home insurance, impacts on housing markets and the effects on the health of people at risk of flooding, (particularly vulnerable and socially disadvantaged groups). Local actions are often linked to the short-term emergency response, but may also be able to play a role in addressing longer-term consequences.
- For **community energy generation and efficiency**, local actions often seek to ensure energy system sustainability, to avoid longer-term stresses in terms of access to affordable energy or the effects of ongoing carbon reduction policies, which could themselves generate shocks (such as a sudden fuel price increase). Community renewable energy projects also redistribute power to consumers and provide a common solution to the stress of energy dependence on fossil fuels and decreasing supplies.
- **Community food growing** actions can be framed as adaptation to stresses (e.g. a general increase in food prices due to crops abroad affected by climate change) and avoiding shocks over secure food supplies (e.g. the shock of an extreme weather event eradicating an entire staple crop and a related food price spike). Similarly to actions focused on community energy, local aims tend to be related to ensuring a sustainable and affordable local food supply. Community actions are not necessarily related to reducing carbon, questions over import/export reliance, or food security, although local food production could play a role in reducing the carbon emissions produced by transporting food, and arguably could also play a small contribution on these other aspects too.

Case studies and interviews

To complement the desk-based evidence review, four case studies were undertaken using telephone interviews and documentary analysis. The case studies profile practical, innovative and emerging community actions across the UK that involve citizens working to develop resilience to climate change in relation to one or more of the three defined areas above (flood risk management, community energy and food growing).

Case study identification

A long list of case studies was generated from the online search of documentary evidence, input from advisors and presentations by participants in a workshop organised by CEP in October 2014.² Cases were then assessed against the inclusion criteria presented in Table 1, to ensure the selected cases would facilitate exploration of the key prerequisites, components, barriers and facilitators for building community resilience in the context of climate change.

Table 1: Inclusion criteria and the selected cases

Case study inclusion criteria	Grow Heathrow	Liverpool Flood Resilience Community Pathfinder	Llanelli Cynefin	Norton community wind energy project
Cases include some explicit consideration of developing actions to build community resilience to climate change (though this may not be a core driver)	✓	✓	✓	✓
All cases will focus mainly on one or a combination of three defined areas (flood, food, energy)	✓ Food	✓ Flooding	✓ Flooding	✓ Energy
The cases will be geographically spread across the UK	✓ South England	✓ North West England	✓ Wales	✓ South Yorkshire
A proportion of the cases will be located in areas of social disadvantage	–	✓	✓	–
All cases will have community engagement as a central endeavour (i.e. will focus on citizens being part of the actions)	✓	✓	✓	✓
The group of cases together will cover a range of governance approaches/initiators	✓ Transition Network and Plane Stupid activists	✓ UK Government (Defra)	✓ Welsh Government (NRF)	✓ Community-interest energy company (social enterprise)
All cases will work in partnership with other organisations e.g. voluntary organisations, local authorities, intermediary organisations (e.g. Transition Network, National Flood Forum)	✓	✓	✓	✓
All cases will have at least three years' documented activity	✓	✓	✓	✓
The group of cases together will illustrate a range of community actions with varying catalysts, approaches, purposes and points of interest	Project emerged out of the Transition movement and protest (against expansion of Heathrow Airport). Nature of protest as a factor influencing resilience. Established by outsiders to the community.	Project started with local social issues. Built on activities of a residents' association for community engagement. Links to national government programme on flood risk management; has implications for community role in addressing climate change impacts.	Example of a project located in an area of climate vulnerability and social disadvantage. Project illustrates a different government-led model with no targets, which is about participatory approaches to working with communities.	Example of a project initiated by a company located outside the local area with a mitigation focus that has faced local opposition. Illustrates difficulties of insider/outsider-led initiatives.

Semi-structured interviews

At least two semi-structured, in-depth telephone interviews were conducted per case study site between 16 and 28 January 2015, with community members and practitioners actively involved in the delivery and/or management of each of the case examples. Interview questions were based around a schedule of common questions, to enable comparison across interviews.

Data analysis

In order to establish the range and balance of views and the overall strength of evidence, the different strands of data collected (in-depth interviews, documents and case studies) were examined in order to identify and extract the overarching themes of relevance to each research question.

For further details of the four case studies, see Chapter 4.

4 The case studies in brief

This section provides an overview of the case studies that are drawn-on throughout the report. See the separate [Case studies of community resilience to climate change](#) for the full text versions.

Transition Heathrow/Grow Heathrow

The aim of the Transition movement is to catalyse community action to relocalise economies, in order to make them resilient to the 'twin threats' of peak oil and climate change through the formation of local groups, called 'Transition Initiatives'.

Transition Heathrow is one such initiative. The group's Grow Heathrow project is located on an ex-market garden site in a village implicated by the potential expansion of Heathrow Airport. It was established by activists from the direct action organisation, Plane Stupid, following a 2009 Climate Action Camp.

This case illustrates the nature of protest as a factor influencing resilience, and offers learning on how community action to support resilience can be initiated by people from outside the local area.

Figure 1: Grow Heathrow site poster, London



Source: Katya Brooks

Norton community wind energy project

In January 2010, a community-interest energy company based in York proposed the construction of a new 'community' wind energy project in the parish of Norton, South Yorkshire. The electricity generated would be sold to the National Grid, with any profits going largely to a newly formed co-operative called Norton Energy Community (NEC), owned by Norton residents. These profits could only be spent on collective projects within the local area, with a focus on protecting the environment and mitigating climate change. Since 2012, the project has remained stuck in the planning process for various reasons.

This case therefore provides an example of a community action initiated by a company located outside the local area that has faced significant local opposition, and enables learning on the importance of community consultation and insider/outsider-led initiatives.

Cynefin programme (Llanelli)

The Welsh Government-funded Cynefin programme was established in the town of Llanelli in 2013. Llanelli is one of nine communities across Wales that in which Cynefin 'Place Coordinators' are working

to encourage community groups, businesses and local authorities to work together to make their communities cleaner, safer and better places to live.

A central aim of Cynefin Llanelli has been to develop an emergency flood plan to empower communities in the case of extreme weather events.

This case provides an example of a project located in an area of climate vulnerability and social disadvantage. It illustrates a government-led model in which targets are generated by the community. Therefore, it offers learning on how less prescriptive, nationally led initiatives working through local partnerships can develop community resilience.

Figure 2: Cynefin programme street stall, Wales



Source: @CynefinLlanelli, 2014

Liverpool Flood Resilience Community pathfinder

Since May 2013, Liverpool City Council has been funded by Defra to run a Flood Resilience Community pathfinder (FRCP) project in Belle Vale ward, one of the most deprived wards in the country. Liverpool has a high risk of surface-water flooding, and climate change is exacerbating the risk.

The project involves flood resilience improvements to 32 properties next to Netherley Brook, and measures to raise awareness of climate change, flooding and community resilience across the Woodlands Estate. Local businesses and residents (specifically, vulnerable residents) have been targeted.

The case is an example of community action to improve community resilience to climate change that started with social issues, and built on previous activities and community links. It offers learning on the role of community capital in local action, and how nationally led initiatives can catalyse and develop this.

Figure 3: Installing flood doors, Liverpool



Source: Liverpool City Council

5 Considering resilience perspectives

Box 2: Key messages on resilience as a concept

- **Across the policy, practice and academic landscape there are different definitions of resilience of communities to climate change. These are used across different contexts resulting in a variety of actions.** However, this concept can be summarised as: the ability of communities to reduce exposure to, prepare for, cope with, recover better from, adapt and transform as needed, to the direct and indirect consequences of climate change, where these consequences can be both short-term shocks and longer-term stresses.
- **There is a distinction to be made between proactive and reactive resilience, with the former emphasising adaptation and transformation to both shocks and stresses, and the latter focused on resistance and ‘bounce-back’ after a shock, with less focus on underlying stresses.** The former suggests a need to change existing conditions, while the latter suggests a return to the status quo.
- **Currently, the policy focus in relation to community resilience is generally on responses to shocks associated with the direct impacts of climate change, leading to an emphasis on emergency planning and the role of the community in relation to other institutions, particularly with regard to flood risk management.** Other areas of policy are directed towards indirect shocks and stresses relating to climate change but they are not framed as supporting community resilience.
- **The concept of community resilience to climate change is politically contested.** It has been argued that the approach allows governments to shift the responsibility for actions to mitigate or adapt to climate change onto local communities, using communities as delivery agents, without providing adequate support and without consideration of the capacities of those communities. In contrast, some activists favour communities taking more power and control themselves to develop climate resilience.
- **Academic and practitioner definitions/framings suggest a key component to building resilience generally is to understand and develop the adaptive and resilience capacities within a community.** A capacities approach implies a need for community development, building on the assets that exist within communities, specifically community capital (relationships between people, networks); institutional capacity (formal and informal together with links with citizens in communities); infrastructure (land, flood defences, energy generators); economic capacity (local economy, individual resources); and social capacity (abilities within the community e.g. education, mobility, language).
- **However, resilience initiatives need to recognise uneven community capacities to respond and pre-existing vulnerabilities,** as well as the differing distributional impacts of climate change, which may hinder communities’ ability to develop resilience.

Introduction

This section provides an overview of theoretical approaches to resilience in the context of communities, disasters and climate change. It examines a number of key areas that are considered to be important components of the resilience of communities to climate change shocks and stresses. It outlines and analyses:

- the concept of resilience;
- a capacities approach to building resilience;

- the role of community engagement and governance; and
- a framework for examining actions.

An overview of the concept of resilience

There is a plethora of definitions for ‘resilience’ used in the contexts of communities, disasters and systems (see Twigger-Ross *et al.*, 2014 for a brief overview). In relation to community resilience it has been commented that ‘despite growing interest and numerous pages being devoted to it, it lacks coherency, clarity and consistency of use’ and ‘there is a danger of the concept becoming an imprecise buzzword that loses potency’ (Young Foundation, 2012). Given this, it is important to discuss those different meanings and to understand how they are being applied.

As well as the different contexts in which the concept of resilience is being used, from climate change and environmental disasters to economic resilience in the context of austerity, there are different perspectives within the academic, policy and practice communities on what the term means. To begin with, this section sets out the development of the concept within the academic sphere, and this is followed by discussions of its application by UK policy-makers and practitioners.

Academic perspectives

Within the academic literature there has been increasing use of the term resilience particularly in relation to disaster management. Authors (e.g. Armitage *et al.*, 2012; Cutter *et al.*, 2008, 2010; Norris *et al.*, 2008) note the change in concept from a narrow, engineering-based, structural definition of resilience to a more interdisciplinary concept focused on the interrelationship between social and ecological systems. That is, a focus on the human systems and processes that interact with ecological processes. For example, there is a recognition in flood risk that the management of a river to reduce flooding requires understanding of both how and where the river floods, as well as how people make decisions about planning and management within a flood plain. Generally, the term emerged in a range of different fields in the 1960s and 1970s, but has spread more widely since the 1980s.

Table 2: Resilience concepts (adapted from Armitage *et al.*, 2012)

Resilience concepts	Characteristics	Focus on
Engineering resilience	Time to return back to original state efficiency	Recovery, constancy
Ecosystem/ecological resilience and social resilience	Buffer capacity, withstand shock, maintain function	Persistence, robustness
Socio-ecological resilience	Interplay of disturbance and reorganisation, sustaining and developing	Adaptive capacity, transformability, learning innovation

Much of that work is located within a socio-ecological systems approach, which takes concepts grounded in ecology. Resilience is conceptualised as a dynamic property of a system, enabling it to maintain its structure and function in the face of change.

[...] a highly resilient system would be able to maintain or recover key functions through transient and exogenous shocks. If a stress or disturbance does alter the ecosystem, then it should be able to bounce back quickly to resume its former ability to yield a service or utility rather than transform into a qualitatively different state that is controlled by a different set of processes.

Dawson *et al.*, 2010

Translating this to communities, this relates to social networks and quality of life being maintained in the face of change, specifically direct and indirect climate change consequences.

Resilience-building strategies can be considered to be 'reactive' or 'proactive' (after Dovers and Handmer, 1992, and developed further in the context of flooding by Twigger-Ross *et al.*, 2014 – see Box 3).

Box 3: Reactive and proactive resilience

Resilience as 'resistance': holding the line, preparing for the last disaster. This is useful when it prepares people for a hazard, e.g. flood gates on houses, but not so useful when the hazard is not as anticipated, e.g. overtopping of flood defences that overwhelms flood gates, and no plan for evacuation. **REACTIVE**

Resilience as 'bounce-back': getting back to normal. Useful in terms of an optimistic rhetoric. Not so useful because it can be unrealistic, and can lead to reproduction of vulnerabilities. For example, in an area that is prone to flooding, a reactive response may involve putting back the home exactly as it was, rather than installing some measures to minimise damage in a future flood (e.g. replacing carpet with tiles or moving plugs up the walls). **REACTIVE**

Resilience as 'adaptation': adjusting to a new normal. Accepting that your world has changed, which should ensure that vulnerabilities are not reproduced. Can be hard for people to accept living with hazards. Measures might include developing a household flood plan, joining a Flood Group, making sure vulnerable people are looked after in the local area. **PROACTIVE**

Resilience as 'transformation': owning the need to change. Transforming to meet future threats. Radical change (physical, social, psychological, economic) in the face of current or future hazards, owned by individuals and communities (of all types). Activities might include relocation of homes, restructuring institutions to be able to cope with flooding, and allowing buildings to flood. **PROACTIVE**

A reactive approach focuses on maintaining stability and the status quo, whereas proactive resilience focuses on change and adaptation. Interestingly, Castan Broto and Bulkeley (2013) in their extensive review of climate change experiments/interventions in 100 cities across the world find that, 'experimentation involves multiple forms of technical and social innovation. Despite the diversity of experiments, these do not always challenge established ideas about the management of resources in the city.' In the context of climate change interventions, it is still quite possible that experiments are focused on maintaining stability (which in the long term may not be resilient), rather than taking a more proactive approach that looks forward to, and is able to adapt to, change and uncertainty. Furthermore, proactive resilience looks more towards addressing longer-term stresses, whereas the reactive approach focuses more on shocks.

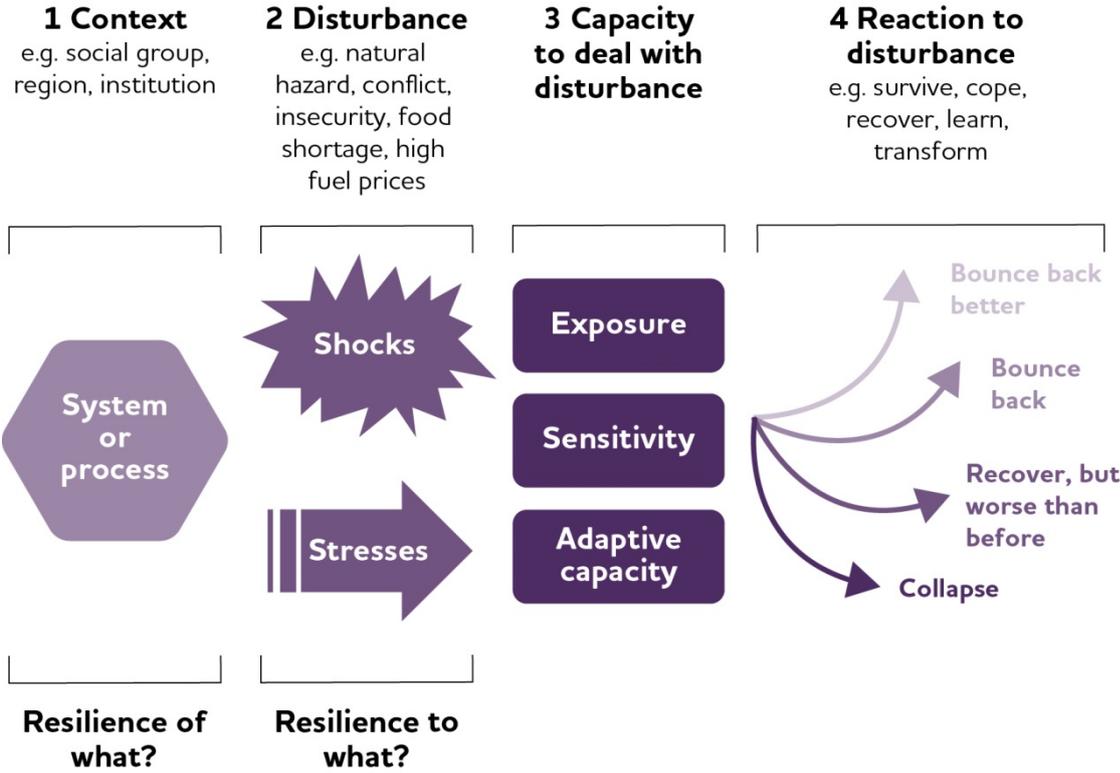
In the context of disasters, resilience is defined in terms of communities and individuals being able to prepare for and respond to the disaster. The Department for International Development (DFID, 2011a) reviewed many types of resilience and has a working definition in the context of disasters as:

Disaster Resilience is the ability of countries, communities and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses – such as earthquakes, drought or violent conflict – without compromising their long-term prospects.

DFID's work identifies four key elements to a resilience framework:

- the context – clarifying the focus of resilience (i.e. here, a community/place etc.);
- the nature of the disturbance – i.e. to what resilience is needed (e.g. floods/price rises);
- capacities to deal with this disturbance – affected by exposure, sensitivity and adaptive capacity (see also Lindley *et al.*, 2011, for application of these ideas in relation to climate impacts in the UK); and
- reactions with different possible outcomes – from bounce back to collapse (Figure 4).

Figure 4: The four elements of a resilience framework (from DFID, 2011a)



DFID’s model captures aspects of resilience as a general dynamic property. Its framing tends towards consideration of extreme events, or shocks, rather than longer-term stresses, which is not surprising given its origins within the disaster literature.

In relation to this project, the system or process of interest is a geographical community. In terms of climate change, there are both shocks and stresses that can be mitigated as well as adapted to, e.g. floods (shock) or a change in food prices due to crop failures overseas (stress). The capacity to deal with the disturbance is an area discussed later in this report, but provides the idea that the existing system (e.g. a community) has resources and vulnerabilities that may be drawn on and affected by any disturbance. Finally, the reaction to disturbances describes potentially different outcomes, both positive and negative. This definition also includes the concept of adaptation and while it is not couched within climate change *per se*, rather disasters, it does provide a very useful link to the work on adaptation and risk.

This definition introduces two key areas of discussion: resilience ‘to what’ and resilience ‘of what’.

Resilience to what?

Many of the systems definitions talk generally of disturbances, changes, stresses, etc. Much of the work in the disaster literature has focused on resilience to natural disasters such as floods or earthquakes. Within the disasters area, research has moved towards a more proactive approach with the realisation that, with climate change, the pattern of disasters is likely to change and so responses need to be focused on the future, rather than rooted in past events.

In this report, the focus is on resilience to shocks and stresses caused by direct and indirect consequences of climate change, as noted in Chapter 2. Examples of these are shown in Table 3.

Table 3: Examples of direct and indirect consequences of climate change

Consequences of climate change	Shock	Stress
Direct	e.g. floods	e.g. drought
Indirect	e.g. power outages	e.g. increase in food prices

This classification is suggested, as it helps to identify what consequences, policies and actions are focused on, e.g. flood action group (direct, shock); food growing project (indirect, stress).

Resilience of what/whom?

Often what or whom is to become resilient is unspecified, but in this review there is a focus on resilience of communities, that is, the resilience of the community itself, in the sense of neighbourhood functioning and the collective ability of people to cope with issues so that they can withstand a range of generalised shocks and stresses. The term ‘community resilience’ is used in this context to mean the resilience of local people in a particular geographic setting.³

Community resilience is a process linking a network of adaptive capacities (resources with dynamic attributes) to adaptation after a disturbance or adversity.

Norris *et al.*, 2008

In the context of community energy projects, Gubbins (2010) defines community resilience as:

[...] communities having the confidence, capability, resources, knowledge and skills to address adverse factors affecting their cohesion and development. These factors include dramatic events such as extreme weather events; energy cost spikes; blackouts and energy insecurity; and national financial crises; as well as more chronic issues such as rural depopulation; fuel poverty; ageing communities; urban deprivation and unemployment.

Some of this draws on transition approaches (Hopkins, 2011a) or systems theories, but is largely coming out of a community development perspective (Wilding, 2011; Young Foundation, 2012; King, 2014). What distinguishes it from the other framings is the focus on identifying and then building up aspects of communities so that they are able to cope with change, sometimes climate change. What remains as an empirical question is the extent to which building resilience of communities in this generalised way builds resilience to the direct and indirect consequences of climate change.

Resilience as a contested concept

As noted earlier, however, resilience is a contested concept (Henfrey and Kenrick, 2015; Brown, 2013; Hayward, 2013; Harrison, 2012). A positive framing of resilience, with its suggestion that people can have agency in the face of difficulties, overemphasises the ability of those dealing with shocks and stresses to be able to cope, and shifts responsibility for dealing with crises away from the state or those in power.

Resilience discourse emerged partly as a justified response to representations of people as ‘helpless victims’. But vulnerability also signals inequalities in relations of power. People are likely to be vulnerable as a result of their position in relation to others and that positioning needs to be central to policy approaches that aim to mitigate the effects of adversity or crisis.

Harrison, 2012

The risk of a resilience framing is that the costs of coping and the burden on some groups within the community, such as women, are overlooked (Harrison, 2012). Using the concept of resilience can also depoliticise situations, as it inherently emphasises resilience of the state and the individual, whereas for transformations in society to happen, e.g. transition towards a low-carbon economy, the political status quo will have to be challenged (Hayward, 2013).

Looking across a number of definitions (see Norris *et al.*, 2008 for an overview), what tends to be lacking in relation to climate change is the aspect of reducing exposure to direct and indirect shocks and stresses. The focus tends to be on responding, recovering and adapting. Beyond addressing direct consequences, such as floods, research tends to be framed around adaptation and mitigation, rather than resilience (e.g. Ingold *et al.*, 2010, but Saavedra and Budd, 2009 for an exception). However, more recently debates have emerged around the concepts of both resilience and vulnerability in relation to climate change (see Maru *et al.*, 2014 for discussion). It is clear there is an ongoing debate around the definition, use and value of the concept of resilience. This could be linked to the current lack of robust data to test out the definitions and theories that have been developed.

Lastly, the vast majority of the available literature on the resilience concept still tends to be largely conceptual and, while some empirical examples are discussed, there remains a lack of robust case studies that prove or test the theories put forward.

Bahadur *et al.*, 2010

However, community action on climate change can be examined in relation to resilience building by exploring how those involved frame resilience, through questions prompted by the review (e.g. are they reactive/proactive in approach, are they addressing a specific shock or stress, are they focused on the whole community, and do their attempts at engagement reach everyone?). The approach to the case studies and other material on practice in this report attempts to do this, and generate some lessons.

Policy perspectives

The term 'resilience' has entered into common use within the world of disaster management in general over the past two decades. It gained increased prominence after Hurricane Katrina in 2005, and began to be used by the UK Government in relation to emergencies with the publication of the Civil Contingencies Act (2004). Local Resilience Fora were formed as a requirement of the Act, comprising key emergency responders and specific supporting agencies. It came to prominence specifically with respect to flooding after the 2007 floods, when approximately 48,000 households and nearly 7,300 businesses were flooded (Pitt, 2007). Following the floods, the Cabinet Office developed a National Strategic Framework for Community Resilience (2011). This work and subsequent definitions are focused on resilience in the context of emergencies.

The definition of resilience as 'the capacity of an individual, community or system to adapt in order to sustain an acceptable level of function, structure, and identity', as provided by the Cabinet Office (2011), is the most widely recognised and adopted definition found on the websites and reports of different government departments (Defra, DCLG and DECC). It has also been taken up within Scotland and Wales, and approaches to encouraging preparedness for emergencies within the general population have been developed.⁴

There is also a definition of community resilience within the National Strategic Framework for Community Resilience:

Community resilience is about communities using local resources and knowledge to help themselves during an emergency in a way that complements the local emergency services.

Cabinet Office, 2011

This puts an emphasis on people in communities taking responsibility and working with emergency services in an emergency situation. It is clearly positioned as part of the UK Government's 'Big Society' agenda: 'This programme is part of the Government's Big Society commitment to reduce the barriers which prevent people from being able to help themselves and to become more resilient to shocks' (Cabinet Office, 2011). As discussed earlier, this framing is also regarded by some as a way of pursuing a reduction in the role and remit of the state, and putting more responsibilities and burdens onto the individual and communities.

Within the context of addressing specific hazards, such as flood risk in the UK, a relatively narrow definition can be discerned in the *Making space for water* strategy document (Defra, 2004), focused on the resistance and resilience of buildings. It is in the Pitt review (2007) after the 2007 floods that the

term becomes used more widely, in relation to 'critical infrastructure' and also 'personal and community resilience'.

Resilience – the ability of the community, services, area or infrastructure to withstand the consequences of an incident.

Community resilience – the ability of a local community to prepare for emergencies and to respond and recover from them.

Pitt, 2007

In the context of climate change, the National Adaptation Programme (NAP)(Defra, 2013) uses the term resilience in three key ways: 'climate resilience'; 'resilience of', e.g. infrastructure and buildings'; and 'resilience to', e.g., flooding, wildfires etc. The definition provided in the glossary is as follows:

Resilience – describes the ability of a social or ecological system to absorb disturbances while retaining the same basic ways of functioning, and a capacity to adapt to stress and change

Defra, 2013

This links in with the Cabinet Office definition, but includes adaptation to stresses. Even so, the emphasis of the NAP is on becoming resilient to the direct consequences of climate change, and it focuses on shocks rather than stresses. There is no consideration of the indirect consequences of climate change (for example, its effects on the costs of living) and little attempt to address stresses, both of which would require greater links with, and consideration of, building a low-carbon society. The focus is on the resilience of a wide range of entities, from buildings through to communities, and in terms of reactive/proactive it sits between the bounce-back and the adaptation approaches. What is really evident, however, is how the implementation of the programme relies almost entirely on voluntary actions, specifically with respect to local government, which suggests limits to what might be achievable at a national level through this programme. For example, with respect to vulnerable groups, it suggests that: 'Effective solutions on how to support vulnerable groups should therefore be found and led by the local community or local council, with voluntary groups playing an important role' (Defra, 2013).

DFID has the most comprehensive definition of resilience, with not only a definition but also a framework, with different components as outlined in the previous section. DFID (2011b) uses this to inform its approach to supporting countries to be better prepared for, withstand and rapidly recover from shocks such as earthquakes, drought, etc. To 'build resilience to disasters and conflict' is the second Policy Goal of the UK Government's Humanitarian Policy (DFID, 2011c). Within that Policy Goal is the recognition of the differential and disproportionate impacts of disasters:

Disasters affect people differently. The poor are disproportionately impacted upon. Women, children, older and disabled people, and politically marginalised and oppressed groups are often more exposed to risks, and usually have less capacity to defend themselves from the impact of a disaster. Understanding these varying dynamics will enable us to take the specific needs of such groups into account when planning and implementing resilience work.

DFID, 2011c

The recognition of the differential impacts is vital to ensuring that community resilience action does not reproduce existing inequalities and vulnerabilities, answering, to some extent, the critiques of the concept. In taking a capacities approach, which is discussed later in this report, there is the potential both to understand existing societal vulnerabilities and to design approaches to resilience that reduce those vulnerabilities, as well as develop new capacities for managing change. Ensuring that an analysis of the differential impacts of climate change is part of any approach to resilience will be vital to its longer-term success.

Overall, it is clear that the concept of resilience has permutated through the UK Government and is being used in a variety of contexts, with each definition sharing core aspects but with slightly different emphases. The main focus is on resilience to specific shocks, both climate change-related (e.g. floods, and to a lesser extent heatwaves) and non-climate change-related (e.g. industrial action). The shocks highlighted are usually of short-term duration. As well as this, the definitions focus on the resilience of a wide range of entities: buildings, communities, households, infrastructure, etc. However, emergency

events are not necessarily described in the context of climate change overall. Given the lead from the Cabinet Office, with their focus on risks, events such as floods and heatwaves are considered in the National Risk Register (NRR) in relation to all potential risks to the UK, e.g. terrorist attacks.⁵ The exception to this is within the NAP, where emergency events are located within the context of climate change, but it is unclear what relation this might have with the NRR. Without a wider framing of these events within a changing climate, resilience is likely to remain focused on maintaining the status quo rather than adapting to future change.

Further, the focus on vulnerability is narrowed to a focus on vulnerable groups, i.e. those who are specifically vulnerable to certain consequences (e.g. older people, people on low incomes and people with health risks). In reality this focus is on vulnerable individuals and how to ensure they are identified within a community and taken care of in an emergency. It does not address issues of lack of capacity more generally within communities. The DFID approach is an exception to this, but the focus of that is on overseas development and not UK resilience.

Practitioner perspectives

The term 'practitioners' is used here to refer to organisations such as charities that are engaged in or advising on practical actions in local communities (e.g. Young Foundation, Carnegie Trust, The Conservation Volunteers (TCV)). For this group, community resilience is a widely-used term, and while some eschew a specific definition (Wilding, 2011), it broadly refers to the sense of neighbourhood functioning and the collective ability of people to cope with issues, such that they can withstand a range of shocks and stresses (be those economic, social, political or environmental), and echoes academic definitions of community resilience. However, it is in marked contrast to the Cabinet Office's definition of community resilience, which focuses on the role that members of the community can play in supporting first responders during an emergency.

Overall, practitioner perspectives focus on the resilience of something, often communities, largely with respect to general shocks and stresses, and rarely relate to specific concerns due to climate change – with the exception being the Transition movement, and to a lesser extent TCV. These perspectives are introduced in the following paragraphs.

The Transition Network has used the term community resilience since the organisation was founded by permaculture designer Rob Hopkins in 2006. In *The transition companion: making your community more resilient in uncertain times* (2011a), Rob Hopkins states:

Making a community more resilient, if viewed as the opportunity for an economic and social renaissance, for a new culture of enterprise and reskilling, should lead to a healthier and happier community while reducing its vulnerability to risk and uncertainty.... Resilience is reframed as a historic opportunity for a far-reaching rethink.

Therefore, the Transition Network is clearly seeking to build proactive resilience practices. For example:

Setting up a food hub to create viable links between local producers and consumers, adding infrastructure for local food processing (such as Transition Norwich's new community mill), creating urban food production and identifying new sites for that, mapping local food sheds and supporting small farmers, setting up Community Supported Agriculture systems, all build food resilience and a community's ability to respond in an emergency much more than food stockpiles, but also have very beneficial impacts on the local economy too.

Hopkins, 2011b

The transition companion (Hopkins, 2011a) develops these ideas further. Here, Hopkins states that 'adaptability is at the heart of resilience', but that it is more than 'sustaining current models and practices. Rather, in the light of 'energetic precariousness', it becomes a rethink of assumptions about infrastructure and systems that should lead to a more sustainable, resilient and enriching low-carbon economy.' He argues here that the resilience that the Transition movement is seeking is to peak oil, climate change and 'the precarious economic situation', because the Network sees these as the greatest risks facing communities.

The Transition Movement emphasises not only the building-up of community with new skills and capacities, but also the longer-term goal of responding to peak oil and climate change challenges. Interestingly, given its adherence to affecting change by providing an alternative to the status quo, rather than directly challenging it through political channels, it has the unintended potential to reinforce some of the messages around passing responsibilities from the state onto communities. However, there are also activists within the Transition movement who favour putting greater power and control into community hands in a more challenging way.

TCV employs the definition of community resilience developed by the Canadian Centre for Community Renewal in the late 1990s: 'A resilient community is one that takes intentional action to enhance the personal and collective capacity of its citizens and institutions to respond to the course of social, economic and environmental change' (King, 2014). TCV's focus is on reclaiming green spaces and through their network of over 1,000 community groups, local green spaces are transformed into green gyms, nature reserves and playgrounds. Their interest in community resilience comes through the recognition that people working together in a specific place develop bonds and networks that could be used in an emergency situation, that volunteering to reclaim green space has wider community benefits. While climate change is referred to in passing, the focus is on how TCV groups might respond in emergencies, but alongside that, the act of reclaiming green space for environmental benefits will often mean it has a positive mitigation role in relation to climate change, e.g. ensuring areas for shade to protect people from heat, and enabling space for water to soak away, reducing flooding.

The majority of TCV initiatives aim to have a positive transformative effect on community resilience and adaptation to climate change, but tend to be funded as health and community initiatives. However, TCV's community groups have been involved in a wide range of primarily reactive community resilience activities, including helping the community deal with extreme weather events like flooding, high winds and snowfall; and creating long-term natural flood defences.

TCV identified four key attributes common to their community groups that make a group effective in responding to new resilience challenges:

1. **Activity** – "The more often you do something the better you get at it and the more skills that are developed";
2. **Self-organisation** – "The ability of groups to run their own affairs and not rely on external input, which might not be there in a 'resilience situation'";
3. **Connectedness** – "Knowing who to turn to when needing or offering help";
4. **Skills and knowledge** – "Most of what you need to know and do as a volunteer is transferable to other situations".

King, 2014

This approach discusses how a community that is resilient to a range of changes might act. There is a proactive and intentional aspect to it, as well as the idea of developing the capacities of citizens and institutions. The key thing that distinguishes this approach from the dominant Cabinet Office definition of resilience is the focus on building-up community and individual capacities in order to cope better with a range of changes, not just emergencies. This complements the focus on developing specific knowledge and skills around coping in emergencies, the idea of having a solid basis from which to reach out to deal with the extraordinary. It also links to broader notions of community development as a basis for resilience building, which is discussed later in this report.

Capacities approach to building resilience

There are a number of authors (e.g. Cutter *et al.*, 2010; Norris *et al.*, 2008; Young Foundation, 2012; Middlemiss and Parrish, 2010; Cinderby *et al.*, 2014) coming from both the disasters and community development literature who elaborate on the type and category of capacity/resource/asset required to develop resilience of a community to a range of shocks and stresses. Cinderby *et al.* (2014), in the context of an intervention to build a local community's capacity to adapt to ongoing economic, environmental and social changes, express it well: 'The capacity of a neighbourhood for resilience can be assessed and derived from the range of assets upon which the community living in that location can draw for adaptive processes.'

The Young Foundation provides a good description of the possible resources needed to make a community resilient to general shocks and stresses (with an emphasis on economic stresses):

Our understanding of community resilience is made up of a number of features incorporating cultural, human, political, financial and social resources. These may include 'hard' assets such as good transport links, access to services and amenities. Also important are local buildings, organisations that enable communities to come together, allowing people to access support and to have their voices heard in relation to local issues. It includes 'softer' assets such as relationships with family, friends, neighbours, colleagues and the support of the wider community. It encompasses links with voluntary and state organisations and the private sector. Most importantly, it not simply about exhorting communities to 'pull themselves together' but about giving them the capacity to identify assets and utilise them.

Young Foundation, 2012

In addition, Norris *et al.* (2008) use the idea of resources with their definition of community resilience to a 'disturbance'. Their focus is not on climate change impacts or transition towards a low-carbon economy, but has been used within the disaster literature.

Cutter *et al.*'s (2010) set of resilience categories comes out of their DROP model of resilience⁶ (and draws on the Norris *et al.*, 2008 work). It focuses on factors that can be measured in order to assess the impact of an intervention on reducing the consequences of disasters (specifically considering floods, hurricanes, drought and earthquakes). While they do not explicitly discuss this in the context of climate change, their work draws on global environmental change literature. Their set of categories is used to measure a baseline of resilience for a community, which could then be measured after a disaster. This type of resilience is termed 'inherent resilience', as it is what exists prior to any disaster.

Finally, Middlemiss and Parrish (2010), within the framework oots initiatives for low-carbon communities, provide a useful discussion of the necessary capacities drawn on by individuals and communities in order for them to make changes towards low-carbon communities. This therefore combines the capacities approach with a focus on the development of specific knowledge, skills and practice to address climate change.

Middlemiss and Parrish (2010) also suggest that different grassroots initiatives will activate different capacities. For example, improving your energy saving behaviour would be increasing personal capacity. Some actions aim at changes that give people the ability to take on more responsibility for sustainable actions. They also discuss how the development of one capacity can interact with other capacities, which is something that is important and not really considered formally by other authors.

Table 4 summaries some of the literature on capacities and the particular aspects of this identified as important in different contexts.

Table 4: Overview of capacity approaches to resilience

Authors	Young Foundation, 2012	Norris et al., 2008	Cinderby et al., 2014	Cutter et al., 2010	Middlemiss and Parrish, 2010
Context	Resilience of communities to generalised shocks and stresses, with emphasis on economic stresses	Resilience of communities in the context of 'disturbance', linked to disasters	Resilience of communities to future environmental, economic and social stresses	Resilience of communities to disasters	Grassroots initiatives for low-carbon communities
Type of capacity/ resource/ asset	Natural resources				
	Social resources	Social capital	Social infrastructure	Social	Personal capacity
	Cultural assets		Cultural infrastructure	Community capital	Cultural capacity
	Human resources	Community competence	Human infrastructure		
	Built resources		Physical infrastructure	Infrastructure	Infrastructure capacity
	Financial resources	Economic development		Economic	
	Political resources			Political infrastructure	Institutional
	Information and communication				

The value of taking a capacities approach in general is two-fold:

- first, it enables a greater understanding of the building blocks of resilience, which in turn should allow assessment of where strengths and weaknesses are present; and
- second, resources for dealing with shocks, e.g. floods, grow out of existing resources, so resilience building becomes a much wider task than just dealing with a single event – it is about building more sustainable livelihoods for all.

The implication of this work for understanding community resilience to climate change is that if these capacities are built up, then communities will be able to respond to and recover from the direct and indirect effects of climate change, and adapt towards becoming low-carbon communities. In order to know that this is happening in practice, we would need to see how a community actually responds in the face of a threat, and also measure how far it is moving towards a low-carbon society. Unfortunately, as discussed in Chapter 6, evidence in this area is patchy and frequently not characterised in terms of resilience.

The role of community engagement and governance

There is a suggestion that successfully building community resilience to general shocks and stresses has community engagement,⁷ empowerment and development at its heart. However, as the definitions of these concepts are contested, there are different interpretations of what they mean and how they can be put into practice in building resilience in the context of climate change.

The term 'empowerment' is often used in the context of community-based regeneration where involvement of local populations in the regeneration process is seen as 'empowering'. Generally, this is seen as a rebalancing of power between the state sector and the

community and voluntary sectors, and is linked to intentions of promoting community-led change.

Adamson and Bromiley, 2008

Other useful approaches to describing the range of public participation approaches include those from the International Association of Public Participation (2007) and Wilcox (1994). There are many documents concerned with community engagement and participation, providing techniques and approaches for engaging with communities both from within and outside those communities. Brodie *et al.* (2011) provide a comprehensive review of the factors that affect participation in community action. Participation is shaped by a multitude of factors that shift in significance over time, and are in turn shaped by the impact of participation itself. These factors operate at different levels:

- individual, including motivations, personality, identity and resources;
- relationships and social networks, including an individual's family, friends, neighbours, colleagues and wider social networks;
- groups and organisations, through which people participate, including their structures, processes and culture;
- local environment and place, including local spaces, events, institutions and politics; and
- wider societal and global influences.

Many papers reviewed (e.g. Amaru and Chhetri, 2013; Ebi and Semenza, 2008; Hurlimann *et al.*, 2014) highlight the need for the involvement of communities in order for climate change actions to be carried out.

In addition, there are papers on understanding what makes successful community organisation in the context of climate change resilience, including studies of local groups in the Transition Movement. The concept of grassroots innovations defined as 'networks of activists and organisations generating novel bottom-up solutions for sustainable development' (Seyfang and Smith, 2007) is used by Feola and Nunes (2014) in their examination of the Transition Network. They look at the success factors associated with transition initiatives using data from a survey of 276 initiatives worldwide, summarising that, 'Success is defined along the lines of social connectivity and empowerment, and external environmental impact. Less successful transition initiatives might underestimate the importance of contextual factors and material resources in influencing success'. In their analysis of the survey results, Feola and Nunes establish a statistical correlation between the success of the Transition initiatives and their ability to co-operate or act in partnership with other organisations and local actors. Feola and Nunes' focus, however, is on what helps to sustain a Transition group over time, therefore providing some evidence on what makes a community group resilient or enduring, but not on whether Transition is contributing more widely to community resilience to climate change, or whether it is finding effective ways to engage or empower communities.

Larsen and Gunnarsson-Ostling (2009) use scenarios to argue for citizen participation, but suggest that there are tensions 'between sustainability content values, such as reduced climate impact, and more process-oriented values such as legitimacy, learning and participatory scenario construction'. This highlights the conflicting relationship between needing to achieve certain goals quickly, in order to mitigate and adapt to climate change, and the approach to engagement that is bottom-up and process-oriented, and can take time.

Different types of governance structure can enable or hinder the development of community resilience to climate change. This review particularly examines how partnerships between citizens and other institutions/organisations support resilience. They may have central or local government funding and be more or less networked into wider institutions of governance (public sector, private sector, voluntary sector). The role of differing governance approaches in supporting resilience is discussed later in this report.

Framework for examining actions

The initial review of evidence here provides the basis for a framework for understanding the extent to which community resilience to climate change is emerging in practice, which will be considered in the following sections. Three aspects will be considered:

- the extent to which different community capacities are being developed;
- the nature of resilience (whether proactive or reactive); and
- the extent of community engagement and nature of governance involved.

First, we suggest the concept of capacities/resources is key. The report will examine the extent to which building up general capacities does help to build resilience in specific contexts, e.g. to flooding, but also whether building up specific resources, e.g. around flood risk resilience, also feeds back into other areas such as community capital. The report draws on the Cutter *et al.* (2010) framework, which captures a wide range of aspects regarded as important to building the resilience of communities to both general and specific shocks and stresses. Box 4 presents the different capacities and how this framework might be applied and used to assess emerging practice.

Box 4: Framework of resilience (adapted from Cutter *et al.*, 2010)

Social: Covers community demographic context, e.g. age, number of people in household, disability, level of education, etc. For different climate change consequences, different variables will affect levels of existing vulnerability. Actions targeted at specific groups, e.g. supporting older people in flood risk areas and providing educational opportunities through food growing projects, could help to build social resilience.

Economic: This focuses on the variables that give an indication of economic capacity, e.g. employment, home-ownership and income levels. Actions that provide an income for local people, e.g. community energy projects and food growing projects, or that reduce costs, e.g. by providing cheaper energy or food, could support resilience.

Institutional: This covers institutional arrangements and experience, both formal and informal, that exist in a place relating to management of flood risk and other direct or indirect consequences of climate change. Actions to establish groups (e.g. in relation to flood risk) that facilitate citizen engagement with local institutional arrangements, and actions that engage citizens both in working with and challenging existing structures to address climate change and move towards a low-carbon society, are relevant.

Infrastructure: This refers to the type of infrastructure needed to facilitate responses to climate change, for example: space for community flood stores; flood defences at the local level (e.g. demountable defence, property level protection); and solar panels, local wind turbines and space for growing food, etc.

Community capital: This includes the existing social networks and relationships within the local area, e.g. knowing neighbours, informal help given/received, participation in active community groups, etc. Evidence suggests this is the 'glue' that keeps communities together, and provides the foundations upon which community resilience can be built.

Second, evidence of community action that promotes reactive or proactive resilience will be examined. It may seem intuitive to suggest that actions focused on reactive resilience are 'bad' for longer-term adaptation to climate change, because there may be little acknowledgement of change or orientation towards a future threat. It is likely to be a more nuanced picture, with both reactive and proactive actions running alongside each other. For example, while flood defences are about resistance, they can be designed to withstand future flooding, thereby building in adaptation. It might be that what is important is to frame strategies as proactive resilience, but recognising that within that there may well be some actions that appear more reactive.

Third, we will examine community engagement and multi-level governance. The evidence suggests that this is vital to ensure actions are owned at the local level, but also plugged in to wider, more formal, networks to facilitate long-term sustainability.

Finally, in considering the actions being carried out to address climate change and move towards a low-carbon society, we will also reflect on two key critiques of taking a resilience approach:

- that it allows governments to shift the responsibility for action to mitigate or adapt to climate change onto local communities, using communities as delivery agents without providing adequate support and without consideration of the capacities of those communities; and
- that it shifts the focus away from those who are climate vulnerable and actions to reduce that vulnerability, together with avoiding questions about why that vulnerability exists in the first place, and so ignores important issues of power and politics.

6 The wider view: emerging practice that supports community resilience to climate change

Box 5: Key messages on emerging practice

- **A lack of monitoring and evaluation around the outcomes of community initiatives limits evidence, learning and guidance for future actions.**
- **Community action related to climate change in the UK is diverse, yet patchy, and fragmented in nature. It is difficult to capture and produce a comprehensive account of all emerging practice:** community groups and projects vary vastly in size, formality and stage of development, and the number and nature of initiatives is not static; indeed it is constantly in flux.
- **Community resilience is a contested, controversial and little-used concept in the context of local action on climate change.** However, in using it within this evidence review to examine examples of community action, it has provided a useful lens on how far actions may ultimately be supporting communities in responding to the direct and indirect consequences of climate change.
- **Direct experience of climate change consequences is a motivator for action.** For example, the main catalyst to galvanise community participation and development of local flood action groups is the occurrence and experience of a flood event.

This section explores how much community action is going on in the UK, which is attempting to build resilience to climate change explicitly or sometimes implicitly. It also looks at how actions are being framed, how the concepts of community resilience are used and what is being done in practice. It notes the extent to which issues of social disadvantage, equity and vulnerability are being addressed, and assesses practice using the five resilience categories used by Cutter *et al.* (2010): social, economic, institutional, infrastructure and community capital.

Limited evidence

Community actions relating to climate change comprise a wide range of initiatives with varying goals and perspectives. Despite this diversity, it is important to first acknowledge that there is limited evidence and formal evaluation around these actions, particularly in relation to community flood risk management and energy actions. For example, a DECC (2013) report summarising current evidence on community energy projects reviewed 25 studies to conclude that, 'the evidence base is limited and does not provide a complete picture of current activity in the UK'. Similarly, Twigger-Ross *et al.* (2014) state that there are two good reasons why flood risk interventions are not evaluated:

- Flood resilience is an applied, complex area with multiple actors and variables, which means that establishing causal relationships (e.g. between increased awareness and change in individual actions) is not straightforward.
- Flood risk resilience is an emerging, interdisciplinary area of study and has not moved into a more hypothesis-testing phase of work.

The Defra Flood Resilience Community pathfinder (FRCP) and its evaluation will provide a significant body of work in relation to flood risk resilience for future actions and evaluations to build on.

With respect to food growing, the review of the evidence has identified a number of evaluations of community food projects (including: Plunkett Foundation, 2012; Matthews and Pratt, 2012; Brook Lyndhurst and Ecometrica, 2011; Kirwan *et al.*, 2011) that could provide some indication on the drivers of action, even though their main objectives were other than 'building community resilience to climate change'. This is discussed further in Chapter 7.

Overall, the lack of evaluation of current practices hinders comparative learning.

The current picture of community action

The search strategy for the evidence review was designed to capture evidence related to the consequences of climate change in general. While people in the UK may have experienced a range of climate change consequences, the focus of documented examples and reviews of community actions is not evenly spread. In particular, limited evidence was found on community actions to address water scarcity and heatwaves; more evidence exists around flood risk management, energy (efficiency and generation) and food growing. This may reflect the areas with which UK citizens have the most experience and where responses are more formally organised, perhaps due to policy drivers and the perceived immediacy or severity of the consequence, feasibility, capacity and/or necessity to act. For example, UK citizens may not feel an immediate threat is posed by the direct shock of heatwaves, and therefore taking action may not seem necessary. Nonetheless, during a heatwave community responses to support each other, in some form, are likely. It is not yet common for community actions beyond flooding, food and energy to be formally organised or documented in the UK. There is a difference in levels of action, and this provides an uneven picture of action across the UK.

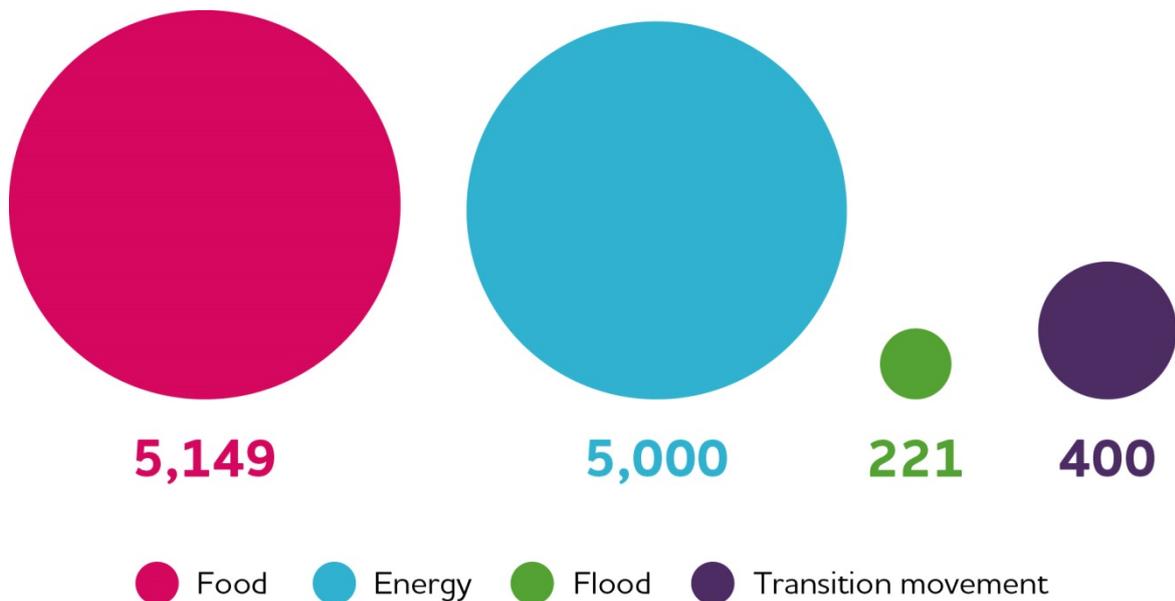
Painting by numbers: the scale of community action

Figure 5 visualises the scale of community action across the UK related to the areas of focus, as identified by the evidence review and case studies:

- Community energy groups: 5,000 community groups across the UK (with projects in various stages of development since 2008 as identified by DECC (2014)).
- Community flood risk management groups: 221 groups affiliated with the National Flood Forum (NFF)(160 across England and Wales) as well as the Scottish Flood Forum (61).
- Community food growing: 5,149 individual food projects of varying sizes supported by: Local Food (500), community food enterprises supported by the Plunkett Foundation (1,600), community gardens in the UK supported by the Federation of City Farms and Community Gardens (1,000), communal growing spaces in London supported by the Capital Growth project (1,962), Community Supported Agriculture (CSA) schemes (80), or communities funded by the Scottish Government's Climate Challenge Fund (7).
- Transition movement: 400 community groups affiliated with the Transition movement in the UK.

It must be noted that community groups may overlap across areas of activity (e.g. a group identified under the category of the Transition movement may also be included under the category of community food growing, if this is a focus of the group's work), and the numbers here only give an indication of scope.

Figure 5: Overview of active community action in the UK, based on evidence reviewed for the project



The most likely explanation for the high number of examples in the evidence base on community food growing and energy efficiency and generation is that related community actions are motivated by multiple drivers, and address shocks and stresses beyond climate change, including saving money. This would also explain why the numbers shown in Figure 5 for community energy and community food growing initiatives in the UK are far greater than those working on community flood risk management.

Defra’s climate change risk assessment projections (2012a) identified flooding as the UK’s most pressing climate risk. Flooding is clearly an issue with which UK citizens have, and will continue to have, increasing experience. It is worth noting that quantifying the number of community groups working on community resilience to flooding across the UK is problematic. This is primarily due to the difficulty in defining a ‘flood group’ as they tend to operate under a wide range of names and associations. For example, some may call themselves residents’, neighbourhood, community or emergency groups.

Developing community resilience in the context of climate change is a process. A patchwork of projects and activities build community capacities and networks, as well as support and achieve specific outcomes and impacts. From the evidence, a key and unanswered question is the extent to which community and climate change actions and agendas connect, and whether, for example, a community flood group could also take action on other climate change impacts.

The picture frame: is community resilience being used?

It was difficult to find examples in the evidence base where community climate change actions are explicitly framed as resilience-building activities in the research, or by community organisations. The evidence review has found community actions related to climate change to be more commonly framed as, and driven by, improving community sustainability or self-sufficiency. For example, DECC’s evidence review *Community energy in the UK* (2014) and *Low carbon communities challenge: evaluation report* (2012) make no mention of resilience or community resilience. However, the evaluators of the Scottish Government’s Carbon Challenge Fund identified an underlying belief that activities would contribute to building community capacities, resilience and longer-term sustainability: ‘Many of the project managers hope that the connections made will increase community capacity and resilience, and be of benefit in the future’ (Brook Lyndhurst and Ecometrica, 2011).

The majority of examples identified by this evidence review related to food growing do employ the term ‘resilience’, but their aims are rarely linked to climate change. However, this term has been used in this project to examine examples of practice, and to assess how far action is increasing community capacities

and how far actions may ultimately be building resilience to the direct and indirect consequences of climate change. While popular in some academic fields (e.g. within disaster management and development) and within policy (e.g. Defra's FRCP scheme), it seems that the idea of resilience has not been a core driver for action in climate change at the community level. There are exceptions, such as some national funders/infrastructure organisations of community action (e.g. TCV, Big Lottery Fund), as well as the Transition movement which aims 'to inspire, encourage, connect, support and train communities as they self-organise around the Transition model, creating initiatives that rebuild resilience and reduce CO₂ emissions' (Transition Network, 2014a). From the evidence, it is not clear whether the Transition movement has a view on emergency-related resilience.

In focus: community action on flood risk management

The evidence indicates that there is currently more community action that supports climate change mitigation than adaptation across the UK. Although, as Matthews and Pratt (2012) suggest, 'many mitigation activities will have implications for community adaptation. This may be because of a perceived focus on emergency planning which is seen as the responsibility of Local Authorities and Emergency services.' Historically, this has certainly been the case within flood risk management in the UK, which emphasises a more reactive resilience, and where the community role is normally developed in the context of supporting emergency response. While the rhetoric and some practices are changing, engineering solutions to flood and coastal erosion risk management still dominate. These may not be sustainable in the face of long-term climate change.

The current context is one of shifting responsibilities to the local level through a number of governance mechanisms that have been implemented since the Pitt review (2007), through the Floods and Water Management Act 2010. This led to the creation of Lead Local Flood Authorities (LLFAs). LLFAs are tasked with the development of strategy for flood risk management in their areas, for maintaining a register of flood risk assets, and for managing the risk of flooding from surface water, groundwater and ordinary watercourses. As well as this clear devolution of responsibility to the local level for strategy and management of floods, there have been significant developments with respect to funding. In 2011, Defra announced a new partnership approach to funding for flood risk management that aimed to:

[...] allow more schemes to go ahead and to give each community more of a say in what is done to protect them.....Instead of meeting the full costs of just a limited number of projects, the new approach could make Government money available towards any worthwhile scheme over time.

Defra, 2011

Both these actions are consistent with the localism agenda.

In addition, there has been a significant move within UK flood risk management towards the recognition of the value of community engagement and community level-responsibility in flood responses:

The discussion to this point reveals a fairly significant 'social turn' in UK FCRM [flood and coastal risk management] in the past two decades, away from an emphasis almost solely on structural flood defence measures and towards an understanding that social and institutional processes, including community engagement, and community-level responsibility have an important, non-structural role in helping people to live with flooding and to make communities more resilient to the impacts of flooding when it occurs.

Nye *et al.*, 2011

There is some evidence in relation to community flood risk management actions but few have been formally evaluated. To date, the main evaluation of a flood resilience community resilience programme is that of Defra's two-year FRCP scheme. Evidence from this initiative is examined below.

Flood Resilience Community pathfinder programme, Defra, 2013–2015

At the time of writing, the FRCP evaluation was still underway and it was not possible to assess the outcomes of the pathfinder projects for this report. Therefore, this section outlines, as far as possible, key

messages from the interim stage of the scheme as a whole and makes specific reference to the [Liverpool pathfinder case study](#) developed as part of this evidence review.

Defra commissioned 13 pathfinder projects in 2013, aiming to understand what factors build the resilience of communities to flood risk at the local level, and to assess the benefits of alternative partnership models and approaches. The requirements for bidders were focused on areas at risk of flooding, and people who might be more vulnerable:

We are looking to bidders to use information about local demographics, and local knowledge of the community context, to identify social groups or individuals that may be more vulnerable and that would benefit the most from engagement and support.

Defra, 2012b

Of the 13 pathfinders, six are carrying out actions to benefit people at flood risk in deprived areas. There has not been any focus on other groups vulnerable to direct and indirect flood consequences, e.g. older people or people with prior health issues.

The pathfinder projects are all led and initiated by LLFAs, but they were all working in partnership with other public sector agencies (e.g. the Environment Agency (EA) is a key stakeholder, with an active role in most of the projects' steering groups), private companies (e.g. utilities companies), civil society organisations (e.g. Groundwork), and community members and groups. Nine pathfinders are working in partnership with the National Flood Forum (NFF), a national charity dedicated to supporting and representing communities and individuals at risk of flooding. This current set of activities at the local level is complemented by the structures set up to manage emergency planning, specifically the Regional and Local Resilience Forums (LRF), which were put in place by the Civil Contingencies Act 2004. Members of a LRF represent leading public bodies and make up the senior management group, who are responsible for undertaking preparations for, and response to, emergencies and incidents in the area (Cabinet Office, 2013). Communities are represented on LRFs indirectly via local authorities. What this provides is a structure through which community resilience planning by LLFAs can feed into wider regional and national initiatives.

The pathfinder evaluation has established a framework for measuring community resilience using the five resilience categories presented in Chapter 5: social resilience, economic resilience, institutional resilience, infrastructure resilience and community capital. Interim findings showed all 13 pathfinders had made progress in Year 1 on the interventions outlined in their original project plans, many of which directly contribute to resilience building as illustrated in Table 5.

Table 5: Example pathfinder activities grouped by resilience category

Social	Economic	Institutional	Infrastructure	Community capital
Targeting residents in areas of multiple deprivation	Work with insurers to reduce premiums/consultation with insurers	Flood champions/flood watch activities/flood warden training courses	Property-level protection/surveying	Social media/e-learning packages/educational DVDs
Mapping and identifying need	Engaging with businesses	Flood groups/flood forum/annual peer workshops	Surface water management measures/leaf litter projects	Film festivals/public engagement events
Information in different languages	Flood plans for businesses	Community flood plans/community 'toolkit'	River stewardship/upland land management	Community learning events
	Researching/obtaining additional project funding	Engagement with schools and pupils/land owners/local scout, cub and beaver groups	Flood action trigger and warning systems (rainfall gauges, sirens)	Preparing for a 'community flood bus' tour
		Developing relationships with other existing community groups and companies	Survey highway drainage into culverts/drain network surveys	Baseline surveying through door knocking/drop-in sessions
		Procurement (e.g. of property-level protection)	CCTV river monitoring scheme	Distributing flood packs/grab-boxes to properties/communities

An as yet unanswered question regarding the outputs from pathfinder projects is whether they can, and will in the long term, connect with or initiate actions and agendas on other direct or indirect consequences of climate change. In the Liverpool and West Sussex pathfinders, the top-down aim of the LLFA is for some flood groups to operate at the parish level, as sub-groups of wider community resilience groups. However, community resilience tends to focus on emergency planning for other events and is not framed as climate change.

In focus: community action to support the transition to a low-carbon economy and society

This section incorporates findings from the evidence base on community action about what community energy generation and efficiency, the Transition movement and, to a lesser extent, community food growing offer in terms of building capacities for a transition to a low-carbon economy and society.

The Transition movement: a brief introduction

The Transition movement's main aim is to catalyse low-carbon community action to relocalise economies and build resilience to the 'twin threats' of peak oil and climate change, through the formation of local groups, called Transition Initiatives. The underlying assumption is that a future with less oil, and less energy generally, is inevitable but also preferable, both in terms of mitigating climate change and in terms of improved well-being, and that we therefore need to plan and implement this energy descent to a positive, powered-down future. Transition strategy is not simply about prefiguring the future, but reconfiguring the present: its systems, lifestyles and livelihoods, and therefore employs a transformative, proactive approach towards building community resilience through a transition towards a low-carbon society.

Although a number of climate change or low-carbon community networks and organisations, such as the Low Carbon Communities Network and Greening Communities, link existing groups and/or facilitate the creation of new ones, Transition remains the only self-proclaimed ‘movement’ (Coke, 2013). Within the UK, Transition groups undertake a variety of activities, often focused on the ‘themes’ of food, energy, transport, local economy or education. This may range from events such as sustainable energy fairs, local food festivals or walking buses, to setting up a community social enterprise, such as a community-supported agriculture scheme, energy service company or car-share project. The movement is presented as apolitical in terms of party political alignments, but there are some activists who wish to challenge existing power structures more radically, as the [Transition Heathrow case](#) shows.

Community action related to food growing

Transition: food-related action

Adopting the categorisation used by Coke (2013), Table 6 presents five sets of activities categorised by change strategies and the related resilience categories that are being addressed by the various Transition Initiatives.

Table 6: Transition community food activities and resilience (adapted from Coke, 2013)

Change strategy	Increasing relevant knowledge and skills	Encouraging sourcing and eating of local food	Creating local food providers	Enabling a local low-carbon food system	Promoting ‘growing your own’
Activities	<ul style="list-style-type: none"> • Awareness raising, e.g. films, talks, visits • Re-skilling courses and workshops, e.g. permaculture • Food events, e.g. apple days, wassailing • Tips on what individuals can do 	<ul style="list-style-type: none"> • Seed(ing) swaps • Garden share • Community food growing ventures, e.g. community gardens, allotments and orchards • Growing food in public and other spaces, e.g. using guerrilla gardening approaches 	<ul style="list-style-type: none"> • Local seasonal food recipes • ‘Eating local’ challenges • Local food directories • Local food mapping • Local food celebrations • Apple-pressing • Group support for food-related behaviour change, e.g. carbon conversations 	<ul style="list-style-type: none"> • Local food markets • Community local food shops • Buying co-ops and hubs • Local food box schemes • Community-Supported Agriculture (CSA) • Transition farms/market gardens • Processing ‘infrastructure’, e.g. bakery, brewery 	<ul style="list-style-type: none"> • Engagement with existing food retailers • Local produce in local food outlets • Local food plan/vision • Mapping potential of local food system • Voice on local food forums • Support to, and linking of, local food enterprises
Related resilience categories	<ul style="list-style-type: none"> • Community capital • Institutional • Social 	<ul style="list-style-type: none"> • Community capital • Economic • Infrastructure 	<ul style="list-style-type: none"> • Community capital • Economic • Infrastructure • Institutional • Social 	<ul style="list-style-type: none"> • Community capital • Economic • Infrastructure • Institutional • Social 	<ul style="list-style-type: none"> • Community capital • Economic • Infrastructure • Institutional • Social

These activities continue to evolve, but are addressing all five categories of resilience.

Specific examples by change strategy:

- Increasing relevant knowledge and skills: Transition Network's course on 'Resilient Food Systems' offered the opportunity to learn about local food systems and the future challenges in food production (Transition Network, 2013).
- Encouraging sourcing and eating of local food: Transition North Cornwall established the Cornish Diet, which set participants a challenge: 'to source 85% of their food from Cornwall, as well as encouraging local shops and restaurants respectively to stock or use local produce' (Coke, 2013).
- Enabling a local low-carbon food system: The Future of Food, a Transition programme in Essex, has helped primary school children to explore where food comes from and promoted consumption of local food. Activities included apple juice pressing and school participation in the Campaign to Protect Rural England Food Web Mapping (Transition Network, 2014b).

Other community action related to food growing

Evidence on community action related to food growing shows many initiatives have multiple objectives. Food growing actions often contribute to more than one strategic category and resilience capacity. For example, an 'eating local' challenge, such as the Cornish Diet, encourages the sourcing and eating of local food, but could also stimulate the supply and provision of local food in outlets, and consequently 'potentially helps to provide an enabling environment for a local low carbon food system, by creating a source of local food' (Coke, 2013). This helps to build social, institutional and economic resilience to climate change.

Building social resilience is a core aim of many food growing actions. The Local Food funding programme, developed by a consortium of 17 national environmental organisations, distributes funding from the Big Lottery Fund (BLF) to food-related projects, to help make locally-grown food more accessible and affordable to communities, and has supported more than 500 projects (Kirwan *et al.*, 2011). These include enterprises such as box schemes, farmers' markets and food co-operatives; community food growing, such as community gardens, composting and community land management; and education and learning, including celebrating food cultures, sharing good practice and school grounds. The scheme-level evaluation found Local Food projects to be 'a vehicle for a number of social benefits, including community cohesion, regeneration, healthy eating, educational enhancement, integrating disadvantaged groups into mainstream society, and developing people's skills so that they are better able to get into paid employment' (Kirwan *et al.*, 2011). While delivering their overall aim and building social resilience and community capital, Local Food projects are also helping to build infrastructure, institutional and economic resilience.

Between 2007 and 2012, the Plunkett Foundation's Making Local Food Work programme (Plunkett Foundation, 2012) supported over 1,600 local food projects and enterprises to become more sustainable, and offers an example of social resilience as a core driver of community action on food growing. In their exploration of the diversity of communal growing activities in the UK, White and Stirling (2013) state that while 'attending carefully to the definition of this otherwise slippery concept, a particular focus is given to how contrasting aspects of temporality and agency lead to divergent constructions of 'resilience' and the nature of resilience being built is proactive, as it is intrinsically about 'niche protection.'⁸ However, this evidence review suggests that the action of growing food in the context of climate change could be viewed as primarily reactive: projects are commonly 'reacting' to potential food insecurity caused by climate change consequences elsewhere, but they may not be resilient to the direct shocks of climate change in their local areas (e.g. floods and heatwaves) or stresses (e.g. invasive species). The extent to which this is being considered by community food growing actions is unclear from the evidence base.

Community action on energy generation and efficiency

Transition: energy-related activities

The evidence review identified fewer examples of community energy initiatives than those related to community food growing under the Transition movement banner, and they are less embedded.

The aims of such initiatives are to reduce energy consumption and generate renewable energy in the home. However, a number of better-established Transition Initiatives are also beginning to create some of the soft and hard infrastructure that localised energy systems are also likely to require, particularly through setting up local energy service companies. For example, Transition Lewes was one of the first groups to set up a community energy company (Ouse Valley Energy Services Company – OVESCO), an Industrial and Provident Society that has been set up so that the community can invest in renewable power generation projects. OVESCO had a contract with Lewes District Council to help low-income households install solar thermal panels, wood-burning stoves, biomass boilers and PV panels. Transition Lewes has also held a successful annual open eco-house event, demonstrating how to retrofit homes with climate change adaptation technologies, and has set up a social enterprise with Transition Brixton to promote draughtproofing, etc.

Table 7 provides a useful overview of the range of practices relating to community energy generation and efficiency that Transition groups in the UK are promoting, categorised by change strategy and the related resilience capacities being addressed.

Table 7: Transition community energy activities and resilience (adapted from Coke, 2013)

Change strategy	Increasing knowledge and skills	Promoting generating your own renewable energy	Encouraging reduction in building energy use	Creating local renewable energy providers	Enabling a local low-carbon energy system
Activities	<ul style="list-style-type: none"> • Awareness raising, e.g. films, talks, visits • Re-skilling courses and workshops, e.g. building household renewables • Energy events, e.g. energy fairs • Tips on what individuals can do 	<ul style="list-style-type: none"> • Grant provision for household-level generation 	<ul style="list-style-type: none"> • Building energy audits • Encouraging take-up of insulation • Energy monitor loan schemes • Group support for behaviour change 	<ul style="list-style-type: none"> • Local renewable energy (service) companies • Buying co-ops 	<ul style="list-style-type: none"> • Engagement with existing power companies • Building sustainable homes/buildings • Community Land Trusts • Local energy visions and plans • Mapping potential of local energy system • Neighbourhood retrofitting • Street lighting projects • Business energy resilience assessments • Commenting on national energy policy consultations
Related resilience categories	<ul style="list-style-type: none"> • Community capital • Institutional • Social 	<ul style="list-style-type: none"> • Community capital • Economic • Infrastructure 	<ul style="list-style-type: none"> • Economic • Infrastructure 	<ul style="list-style-type: none"> • Economic • Institutional 	<ul style="list-style-type: none"> • Infrastructure • Institutional

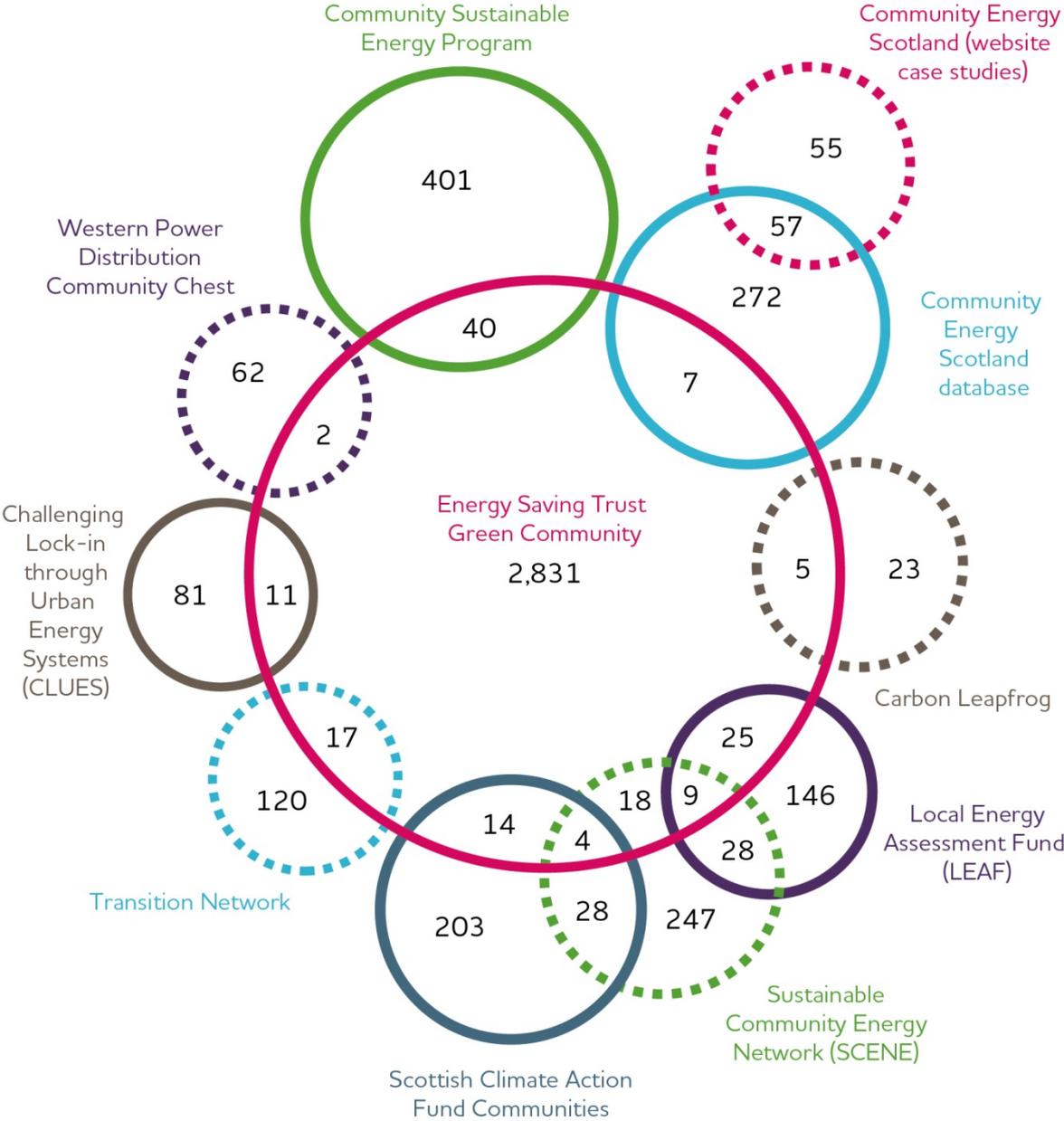
Energy practice outside Transition

DECC's 2014 evidence review, *Community energy in the UK: Part 2 final report*, states that it is not possible to quantify the number of community groups that are currently active in the sector, but suggests:

- activity is particularly prevalent in Scotland and South West England;
- although the majority of groups are based in urban areas, the prevalence of activity in rural areas is greater than would be expected, given the relative number of people living in rural as compared to urban areas; and
- the number of community groups in areas of high deprivation is similar to the number in areas of low deprivation, although there is some variation in the types of project being undertaken. The number of community groups solely undertaking projects to raise awareness of opportunities to improve energy efficiency appears to be higher in deprived areas than in areas of low deprivation (DECC, 2014).

Figure 6 provides a useful, if over-simplified, graphic overview of the primary data sources and the number of community energy generation and efficiency projects, their funding streams, governance and the significant overlaps between strategies as identified in the evidence review for DECC (2014). It is clear that a community may contribute to more than one strategy and/or have more than one funding stream, for example, of the 203 community initiatives funded by the Scottish Climate Action Fund, 32 are also part of the Sustainable Community Energy Network (SCENE), and 18 are involved as Energy Saving Trust Green Communities. For a specific example, Transition Horncastle is part of the Transition Network and the group's Green Mothers and Toddlers Group was one of 11 community groups that won funding for energy measures from the British Gas Green Streets programme. Therefore, the sustainability of a community practice and potential to effect long-term social change could be increased by participating in and linking multiple networks and funding streams.

Figure 6: Primary data sources used in the DECC (2014) study, and a simplified illustration of the number of community groups identified and significant overlaps



Note: The diagram accounts for approximately 95% of records included in the master database (N=4,706)

A detailed examination of 21 projects funded by the Scottish Climate Challenge Fund (CCF) found that the majority had provided services or support for short-term behaviour change, with only a few, '... seeking to get local people fully involved in transformative programmes of collective action on climate change' (Brook Lyndhurst and Ecometrica, 2011). The CCF was set up to help communities address climate change by reducing their carbon emissions. Between 2008 and 2011, 261 communities across Scotland received funding to carry out 331 projects. Projects were funded to encourage people to adopt new low-carbon behaviours in a number of areas: energy, food growing and purchasing, transport and waste.

The projects' outputs indicated positive outcomes for the building of proactive resilience for all five resilience categories: social (e.g. health and well-being), community (e.g. community cohesion), economic (e.g. carbon savings, benefits to local economies), infrastructure (e.g. generation of renewable energy systems, insulation) and institutional (e.g. developing relationships with existing networks, such as local education systems). The evaluators concluded that the projects were successful in accelerating change,

opening up new possibilities for action that people might not have considered, and helping participants to overcome barriers to change, but had little impact on individuals not already open to change.

The 14 community projects chosen to take part in the British Gas Green Streets programme represented a wide range of backgrounds and communities, including high to low levels of community capacity (i.e. particularly organisational capability and knowledge of the different types of intervention available to save and generate energy), and economic and social resilience (i.e. from significant financial resources to others from very deprived communities).

Each community project was given technological advice from British Gas and a share of a £2 million fund to spend on micro-generation and energy efficiency measures in community buildings and surrounding households to save energy, generate energy and engage the wider community.

Only one of the 14 projects made explicit links to climate change in its objectives (Hyde Farm Climate Action Network); three projects' objectives related to engaging disadvantaged and vulnerable communities; and one Transition Town project had a range of objectives (Horncastle).

The evaluation of DECC's Low Carbon Communities Challenge (2012) found that in addition to the 8,702 low-carbon measures delivered in the 22 'test-bed' communities, actions were undertaken related to other consequences of climate change, such as allotments (food security) and a rainwater-harvesting system (drought). Baseline awareness levels on climate change/energy savings were high in all communities involved in the Low Carbon Communities Challenge: 'This is reflective of the fact that in some areas a substantial amount of activity was already occurring in response to previous initiatives, which the Low Carbon Communities Challenge may have replaced' (DECC, 2012). Therefore, it is difficult to know how much additional impact was made by the projects on the involved communities' resilience capacities and abilities to take action. This highlights the potential for community action to develop and make a difference in the context of climate change when high levels of community capacity exist across all aspects of resilience.

Summary

This section has presented an overview of the practice landscape with respect to actions to reduce climate change consequences and/or facilitate the transition to a low-carbon society. Broadly, actions are focused on building up the different capacities important for resilience building, with key synergies emerging between institutional capacity building (e.g. development of flood action groups) and community capital (relationships between people).

The direction of travel for flood risk management is from a predominantly reactive focus towards a more proactive approach, especially as flood action groups get more established and start developing flood action plans and linking into wider strategic flood risk management processes.

The Transition movement vision is very much a proactive transformative one, and core activities such as food growing and renewable energy projects place emphasis on that. However, more research is needed to understand how far the Transition movement considers resilience of its activities to climate change impacts, e.g. flooding, drought, etc., in its planning for a low-carbon society.

It seems that community actions relating to food growing tend to have the broadest appeal, and may offer the greatest potential for engaging people in community resilience to wider climate change consequences, closely followed by community action on energy.

Overall, the evidence from practice suggests that community capital does appear to be a core capacity and other capacities are less likely to be delivered without it. More research is needed to understand this fully. The next chapter looks in more detail at which factors support or undermine the development of community resilience in the context of climate change.

7 Factors that support or undermine the development of community resilience

Box 6: Key messages on factors that support or undermine community resilience

- **Evidence from practice supports theoretical ideas that developing capacities can build resilience.** Depending on the type of local action and pre-existing conditions and resources, some may be more critical than others:

Economic resources and/or access to funding are essential to start up and develop community actions. Community ownership of, or access to, infrastructure and land may prove critical in providing a site for the activity to take place, or for local groups to meet and share knowledge and skills.

Local knowledge and pre-existing capabilities can provide valuable resources and insights.

Building on community capital to develop institutional capacity can increase wider community resilience.

- Community action that can stimulate resilience to climate change is motivated by a range of factors including concerns about climate change itself, but also other motives.
- **A wider, social framing can lead to community engagement in actions that support climate change resilience:** actions that start by dealing with a community's daily needs and concerns, and aim to increase community well-being more widely, can be more appealing than a climate change focus. This framing may vary depending on the socio-economic characteristics of the community.
- **Engagement across the local community cultivates acceptability and ownership of responses to climate change.**
- **An 'outsider' status can undermine the potential for an organisation to establish an initiative.** Early local involvement and transparency in planning and decision-making can mitigate against this.

This section looks at the factors that may help or undermine resilience building. Despite the lack of documented community actions and limited evaluations undertaken, our review of community action in conjunction with the case study analysis suggests the following factors have a significant impact on the development of community resilience to climate change:

- framing of activities and diversity of drivers for community action;
- community capacities and resources;
- economic resources and access to funding; and
- community engagement versus local opposition.

Framing of activities and diversity of drivers for community action

It is essential to understand what motivates people to engage in community resilience projects and to frame activities in a way that appeals to the community and draws support. Framings will be related to existing community interests and needs, and may therefore vary.

A DECC (2014) evidence review identified the following drivers for groups to become involved in community energy projects (in order of importance):

- addressing climate change/reducing carbon emissions;
- reducing energy bills; and
- community income generation.

Evidence suggests that climate change is often not the primary or only driver for community energy projects. The British Gas Green Streets programme evaluation (Platt *et al.*, 2011) found the drivers or motivations for community leaders' participation varied widely, but primarily stemmed from a desire to do something of benefit for their community and be part of a local initiative, to do something about climate change, or both.

Matthews and Pratt (2012) concur:

... 'climate change' as a concept may not be the best way to engage people or to frame local activities [...] placing climate change action within the broader field of improving community resilience and sustainability might be more fruitful, especially if this enables actions to be more explicitly linked to more everyday concerns, like jobs, skills, food, injustice or wellbeing.

This framing has been argued to be particularly effective in engaging with people who live in more deprived, urban communities who are likely to respond to 'attractions that go beyond climate change debates to 'here and now' benefits' (Matthews and Pratt, 2012), while it also appears to appeal to community leaders. Examples can be found in initiatives related to energy, food, and others aiming to reduce the need for goods and people to travel long distances, and increase resilience to global economic shocks. The latter provides an example of a framing that incorporates some of the indirect consequences of climate change, in this case the increase of fuel prices linked to the cost of transport, which affects people in a more obvious way than climate change, *per se*.

Community food growing action is often a route into involvement in community action addressing other consequences of climate change. Using food as a route to engage people can be much more productive in attracting participants outside of 'the already converted' (Brook Lyndhurst and Ecometrica, 2011). The experience of Transition Heathrow has borne out the finding that, 'food and gardening projects are far and away the most popular practical ways for Transition initiatives to start engaging people in hands-on action' (Haxeltine and Seyfang, 2012). Coke's (2013) review of Transition initiatives points out that 'food is usually the first theme to inspire community action in a Transition Initiative'.

The Good Life Initiative (Cinderby *et al.*, 2014) provides insight into potential pathways to community engagement, particularly in less affluent areas. They maintain that flexible delivery is required to ensure that the activities resonate with local needs, knowledge and skills. Broadly, community food projects tend not to have 'building community resilience to climate change' as a central, explicit objective (DECC, 2014). Instead, this tends to be a more informal aim or unintended outcome of making locally grown food more accessible, sustainable and affordable for communities.

A number of stimuli can be identified for community food growing actions, including: the recession, increasing awareness of food, links with health and well-being, increasing publicity given to campaigns for ethical food production, Slow Food and organic movements, limited allotment availability, and increasingly busy lives. Significant amounts of grant funding have been made available from the BLF (of which Making Local Food Work was one funding stream).

The success of this framing can be partly attributed to the perceived benefits of community food growing, which extend beyond food, resilience and climate change:

While the main activity in the UK is growing food, much else is grown in the process – including community, confidence, welfare and skills[...] [G]rowing is recognised to have the potential for therapeutic benefits for those involved[...]. It can also enable people to access fresh, healthy produce relatively cheaply where they have more time but less money.

White and Stirling, 2013

Learning to work collectively has also been found to help individuals develop key social skills, as it provides opportunities to have fun and be sociable (Matthews and Pratt, 2012). There is also evidence that people will get involved as a means of protesting against perceived threats to their local community or neighbourhood. In some cases, this has direct links with concerns related to climate change. Box 7 provides an example of a community-led, crowd-funded energy scheme, REPOWERBalcombe in West Sussex, Southern England, where community interest in action was galvanised by the threat of fracking.

Box 7: Learning from REPOWERBalcombe

Community generation co-operative REPOWERBalcombe was established in 2013 by community members of Balcombe, a village in West Sussex. Similarly to Transition Heathrow, this community action originated out of protest; in Balcombe's case, it was the threat of fracking explorations in the local area by Cuadrilla Resources that galvanised opposition and action. A core aim of REPOWERBalcombe is to eventually generate the equivalent to 100% of Balcombe's electricity demand through community-owned, locally-generated renewable energy. Profits from the scheme will go back into the village, funding more solar installations and energy-saving measures for homes and community buildings; increasing all resilience capacities; and furthering the transition to being a low-carbon community. The campaigning organisation 10:10 has been 'working with them on a way to let people further afield invest in the co-op too, helping to finance the project, while keeping control in local hands... helping to unite the so-called 'fracking village''. The support of 10:10 will have provided a boost to community capital and institutional resilience.

Similarly, Transition Heathrow was initiated by activists protesting against airport expansion as part of efforts to avoid increased carbon emissions linked to concerns about climate change. The group's Grow Heathrow initiative has been focused around developing a derelict space and food growing activities in a threatened village, thereby improving local amenities and offering scope for hands-on involvement from local people. The agenda is also more directly about saving homes within these communities, which connects with local interests and motivates wider involvement and support.

How actions are framed will hinder or facilitate the engagement of community members. While there may be scope to extend this to emphasise climate change over time, this research shows that a focus on activities that perhaps meet a number of needs, from personal through to community, and lead to a range of capacities being developed, might be the most fruitful way forward. It also suggests that threats can galvanise community action in a way that may also build resilience.

Community capacities and resources

Pre-existing capacity, local knowledge and capabilities

One of the main characteristics of resilient systems is the presence of local and traditional knowledge and pre-existing capabilities.

These were identified by the British Gas Green Streets evaluation as enabling factors: 'Pre-existing skills and circumstances in some communities – such as the professional background and financial security of group leaders and members – made a clear if not decisive impact on the outcomes of the project' (Platt *et al.*, 2011). In the Norton community wind energy case study (see Chapter 4), the main director (though not a local resident) noted that he had been taking the project forward himself, bringing in expertise and utilising contacts he had gained from past work in the wind energy industry.

Volunteers and voluntary groups often provide essential human resources for community projects. Volunteering⁹ has a strong and established history in the UK, with 41% of adults in 2013–14 volunteering formally at least once a year (Cabinet Office, 2014). A study on volunteers involved in flood and coastal risk management in England highlighted the importance of mobilising volunteers through provision of guidance, processes and tools, and recognition of the importance of local knowledge (Forest Research, 2015).

The value of pre-existing community capacities and knowledge cannot be underestimated, especially in the current political climate, leading to a greater reliance on community members to initiate and lead

actions. This has implications for the extent to which actions focus on those who are most climate disadvantaged. Jonsson and Lundgren (2014), while researching community approaches to heat stress in Sweden, found considerable local knowledge about vulnerability drivers and the inter-relations between social factors and vulnerability. That suggests that this type of 'contextualised knowledge' is valuable in developing adaptive responses that take account of local vulnerabilities and avoid increasing inequalities. See Chapter 9 on resilience and vulnerability for further discussion.

Even in cases where capabilities exist in a community, it can be difficult for small organisations or volunteers to mobilise the time, expertise and resources required to see a project successfully through planning (Walker, 2008). In the Norton case study, both directors of the community-interest energy company had full-time jobs outside of the project and had to commit significant amounts of their free time. Similarly, much of the FRCP work has been made possible by residents incorporating tasks such as monitoring river levels into their daily lives.

Lack of time as a resource or lack of commitment can hinder the development of an initiative, and its importance should not be underestimated. This also matters in making the time for new networking activities (as below).

Community capital and institutional capacity

The Liverpool pathfinder case study highlights the importance of strengthening institutional resilience (i.e. the capacity of institutions to work effectively together and with local organisations) as an element of overall community resilience. This creates links from the community to wider resilience networks, across local, city-wide and national agencies and organisations (including the EA, water companies, neighbouring local authorities, ward members, local MPs, the NFF, police, Defra, voluntary organisations and private companies).

In the case of community flood resilience, there is considerable overlap between institutional resilience (which focuses on organisations and networks specifically working on flooding) and wider community capacity not directly concerned with the management of flood risk. Community capital includes community groups, networks, local knowledge, flood experience, etc.

In the Liverpool case study, a small group of volunteer flood wardens monitors water levels in the river, warns neighbours about flood risk, and provides information about blockages and problems in the river to the relevant management authorities. One interviewee highlighted that while property-level protection (PLP) measures have been a key focus of the project, the awareness they create in the community is the most important gain in terms of resilience:

“[Property level protection] hasn't got longevity in the sense that after a certain amount of time it deteriorates. That's the way of the world. But the bigger message for me, really, is this awareness thing, and getting people aware of what flooding ... what the flooding risks are and how they can prepare themselves for it. And it's the mantra within our emergency planning, really, in terms of be aware and then prepare.”

Interviewee 3, Liverpool pathfinder case study

This reflects the importance of linking community infrastructure (e.g. PLP) to increased community capacities.

Building on pre-existing community capital, the Liverpool pathfinder has supported the setting-up of a flood group by engaging community members in activities through the Woodlands Estate Residents' Association. One interviewee reported that community engagement, awareness raising, and the development of innovative tools and activities are helping to foster community ownership, trust and sustainable practices:

“Community capital is the key to sustainability. The role of the residents' association has been critical in the success of the pathfinder so far. PLP is the hook that is being used to open the door of engagement with local residents so that they can be aware of the risks and make preparations.”

For the Liverpool pathfinder, the creation of a community flood group was the next step in developing institutional resilience. The flood group has drawn up an action plan of the local flooding concerns to discuss with various agencies. There has been an emphasis on building links to emergency planning and flood risk management institutions. There have been several multi-agency meetings attended by the council, the EA, United Utilities (the local water company) and the residents' flood group. These meetings provide an opportunity for residents to raise issues of concern about flood risk management and to find out about the work that the agencies are doing, as well as improving cross-agency working and sharing of learning. For example, these agencies recently gave a joint presentation to a major conference in the city on how to put together an effective flood plan. The project has enabled local residents to work on initiatives with multiple objectives, going beyond increasing physical resistance to flooding to encompass measures that increase the physical attractiveness of the area and the well-being of its residents, such as the planting of trees in collaboration with Mersey Forest. There is great potential offered by these activities to enhance flood risk management and preparedness in ways that quantifiably improve the community's overall resilience, and to deliver sustained improvements that have the potential to be applied in other areas.

Another example of building on pre-existing structures is Sustain Eden, a new partnership built on the Cumbria Action for Sustainability, a three-year project funded by the BLF's Communities Living Sustainably (CLS) programme in response to floods in Cockermouth in 2009. The project sought to address flood risk issues through effective planning and investigate potential sustainable transport models with a focus on building community resilience to climate change. Following on from, and building on, this project, Sustain Eden is also now funded by CLS. Sustain Eden, to date, has supported four voluntary organisations in developing emergency plans; almost 700 people have attended flood awareness-raising sessions; 650 people have attended events where they have shared their own expertise, stories, skills and knowledge; and they have delivered flood defence training.

Economic resources and access to funding

Securing funding can be crucial for successfully planning and developing a project, especially for small organisations or volunteers (Walker, 2008). Lack of economic resources can hinder a project's development and progress. For example, following a two-year period when the Norton project had been sustained by the personal contributions of the community-interest energy company's project leaders, they encountered difficulties in raising money. The main director recalled that at times it had been difficult to access funds, in part because of the complexity of the forms and the criteria that had to be met: 'There are certainly funds there but administratively it's quite hard to get all the boxes ticked.' As one of the directors noted, this was partly because of the stage that the project was at; while funding was available through the Rural Community Energy Fund, this was largely to conduct initial feasibility studies, and develop a business plan and planning application. It was also relatively easy to find funding to complete the construction of projects once they had been granted planning permission. But funding for projects that are between these two stages appears to be more challenging:

"There's been no state funding for years now, and really what's kept the project alive is the fact that I've [personally been part of] a joint venture with an organisation, and they've been happy to pay the odd £1,000 here and there, just to do small reports and things like that, that the planners have asked for."

Community-interest energy company director 1

Access to upfront capital is essential to enable community groups to meet the costs associated with obtaining planning permission for renewable energy schemes, to conduct feasibility studies for technologies, or even to become properly constituted (Platt *et al.*, 2011). In addition, policy on feed-in tariffs and other energy funding streams may have longer-term implications for the financial viability or business models of community renewable schemes. Funding for other projects in the areas of flooding and food has come through central government and charitable trusts. Many of Defra's FRCP projects have used part of the funding to employ dedicated community engagement staff to facilitate the development of community flood groups. For example, this has enabled the West Sussex pathfinder to support community groups to access further funding from the county council to help with running costs. Having responsibility for these funds formalises each group and ensures that they can cover expenses. Cynefin's funding has come from the Welsh Government and supports Place Coordinators to be catalysts for developing community actions around improving the local area. Finally, Transition Heathrow

received start-up funding from the Polden-Puckham Charitable Foundation, and a number of charitable bodies support the Transition movement more widely.¹⁰ In summary, actions to build community resilience require some level of funding to enable them to progress.

Infrastructure and access to land

Other resources that may prove critical include access to land and community ownership of assets such as buildings and equipment. Community assets can be utilised in multiple ways depending on the needs and specific objectives of the community action. Groups generally need somewhere to meet and more may need office space to coordinate action; space may also be needed to store equipment by a food growing initiative, or to act as a local 'resilience hub' where equipment for use in the case of flooding can be stored. Further, it could also act as an evacuation space in a flooding emergency.

While such assets can facilitate the development and operations of an initiative, JRF's review of evidence (Dobson, 2011) following a series of seminars on community assets, warns these assets can become a liability and "*communities need time and support to develop their plans*". The key message emerging for community organisations is that they ought to be 'self-aware, prepared, sufficiently skilled to manage projects and buildings, sure of local support, and ready for a long-term commitment'.

Squatting a privately-owned site, Grow Heathrow has been under threat of eviction since August 2014 but continues to thrive with support from the local residents, the Member of Parliament (John McDonnell MP), Hillingdon Borough Council and the Metropolitan Police. Formerly derelict, the land has been transformed from a site of anti-social behaviour to a well-regarded community hub, organic garden and an example of how communities can adapt to low-carbon, sustainable, off-grid living. It provides a venue for local residents and environmental activists to share knowledge and practical skills, and for other groups to meet. Further land has also been reclaimed for food growing.

This example further demonstrates the wider community benefits arising from the utilisation of a previously deserted space. The JRF (Dobson, 2011) identified these benefits and concluded these should be factored into officials' decision-making in cases of community/public ownership: 'Key messages for government include the importance of timely and adequate support, the need to value public benefits when negotiating sales, and the need to consider the wider costs of letting assets lie neglected.'

Depending on the nature of the project/initiative, some elements and types of capacity and resource may be more crucial than others. For instance, while human resources and local knowledge are undoubtedly a vital success factor for most projects, in the case of community food growing initiatives (such as Grow Heathrow), access to land was the critical factor.

Capitalising on pre-existing community capital (e.g. networks, resources), institutional resilience (e.g. community groups already in place), infrastructure resilience (e.g. flood defences and warning systems), social resilience (e.g. individual knowledge) and economic resilience (e.g. investments in community assets) will help to build community resilience. It is therefore important to understand the starting point and the resilience capacities that are already in a community, in order to build on existing assets and develop momentum.

Community engagement versus local opposition

The importance of mobilising local resources has been discussed earlier, with reference to the skills and knowledge that are available and can be put towards building local community resilience. Nonetheless, engaging the local community also has benefits in terms of social coherence, equity, acceptability and ownership of responses to climate change.

For instance, Bahadur *et al.* (2010) identify a positive link between community engagement and a more equal access to natural resources and resilience. Ebi and Semenza (2008), in a study of the health consequences of climate change in various contexts, further argue that 'engaging communities in the broader process of adaptation will enhance their resilience to climate stressors and will likely increase their ability to cope with other societal issues'. Their study advocates community-based adaptation where engagement is an integral part of the design, implementation and monitoring of any intervention. They suggest that 'the theoretic underpinning of community-based adaptation lies in the concept of social

capital, which is the potential embedded in social relationships that enables... community action to achieve shared goals'.

Grow Heathrow demonstrates how wide community engagement is achieved in practice, and works to support the development and establishment of a successful community initiative. It provides an example of a grassroots movement that has successfully engaged local members of the public, the local council, local politicians and local police authorities, by integrating different concerns over the expansion of the airport and its potential impacts into a single action plan. Community engagement has been integral to each step in the creation and development of Grow Heathrow. At the start of the project, the activists consulted with the local community at a residents' meeting to check that there were no objections to the proposed squatting of the land. With the help of local residents, they cleared rubbish from the site, repaired greenhouses and turned them into living, workshop and growing spaces, and reclaimed land for further planting:

"...They've utilised a piece of land that was being, frankly, abused by the land owner. There was massive amount of fly tip rubbish: car parts, car braking, fuel tanks; all manner of things on this agricultural land. What they've done is be a completely open community space. Anyone can ring that bell at the entrance and they'll open the doors and let you in. As a result it's become a hub and it's the only community space we've got. I'm gobsmacked they could be forcibly removed when they're doing so much good for our community here."¹¹

Christine, local resident interviewed for a video on Grow Heathrow

Building local capacities to cope with future climate change consequences has stimulated debates about the kind of communities and society local people would like to live in, the rights and legalities of squatting on privately owned land, and the politics of climate change. There is an adaptation component, in that one of the aims of the project is to promote community resilience, by developing community and resource autonomy. Community is seen as a bottom-up, undifferentiated locus of democratic decision-making, in opposition to corporate and government elites. In this framing, community resilience to climate change means autonomous local communities that are able to resist the power of carbon-promoting elites and to facilitate a low-carbon future, based on a particular vision of sustainable living: off-grid, food-growing communities, rooted in radical values. It thus requires a social and institutional transformation in both ways of living and processes of decision-making, though the specific resilience is not about adapting to change in the local context, but resisting it.

Beyond the recognition of the importance of engaging the local community, it is also important to understand that different kinds of approach may be needed to get through to residents and build ownership, depending on the characteristics of the community and existing links and networks (community capital). Initiatives that have developed such an understanding and adopted the appropriate approach are more likely to be successful in their engagement. The Liverpool case study offers an example: linking back to the importance of local knowledge, Liverpool City Council (LCC) staff were, as one interviewee put it, 'light on their feet' in reducing the weight of bureaucratic processes to facilitate community participation and make the most of residents' understanding of local conditions. One example was that local residents distributed official LCC letters about the project, in the process explaining their relevance to older people or those with disabilities, single parent families and others who might normally not even look at a formal communication of this kind.

Developing links with organisations outside of the local areas (Groundwork UK, 2013; White and Stirling, 2013; Mguni, 2011) is also viewed as an important factor for successful community initiatives:

The most successful leaders also realise the importance of relationships with other stakeholders, with other outside organisations, with the council and other statutory providers. They can channel the voice of the community members to those who are in a position to make change happen.

Young Foundation, 2012

In contrast, lack of or inadequate public engagement and community consultation can lead to dissatisfaction and disapproval. Often there is an assumption that nominally 'community-led' projects will generate greater local support and avoid the opposition that is common to private developer projects (Walker, 2008). The Norton community renewable energy project, for example, led by a social enterprise

and with social motives, still faced significant local opposition as it was not community-led. There were several reasons for this opposition, but concerns centred on justice and fairness were often at the forefront. In terms of procedural justice, opposition groups complained strongly that there had been a lack of involvement for local people in the design and implementation of the project prior to its submission for planning permission (Simcock, 2012). Once the planning application had been submitted, this concern was raised in several formal objections to the planning authority. Although the community-interest energy company had run a community-wide poll that enabled local residents to vote on whether they wanted the project to go ahead, objectors complained that involvement in this one decision was insufficient – they also wanted greater, more transparent community involvement and influence in other key decisions, such as the siting and number of turbines, and even the choice of technology itself (*Ibid*). They also argued that there was a need for better quality information – without this, the community poll would be essentially meaningless, and people would be unable to make an informed decision:

“These are questions that ought to be answered. I don’t think we can say if we support it until we know more.”

Local resident, male

“[The information] was just very condensed and just basically told you enough to draw you in.”

Local resident, female

In addition, community concerns were heightened by the fact that the community-interest energy company was an ‘outsider’ to the area, which contributed to a lack of trust.

Insiders/outsideers

The case studies demonstrate that undertaking community activities can be even more challenging for an organisation that would be considered an outsider by the local community.

The Norton case suggests that it can be difficult even for well-intentioned social enterprises to simply drop in to a local area and expect to be able to build community energy projects and resilient, low-carbon communities. The project was initiated and led by an outsider to the local area, the community-interest energy company. Despite the company being a not-for-profit organisation led by committed experts in the renewable energy industry, their outsider status contributed to a lack of trust in their motives from local residents.

Residents felt they had not been involved enough in key decisions during pre-planning stages. In other cases of energy projects led from within the local community, by already-trusted local residents, the same degree of involvement and information is not always necessary, since residents are prepared to trust that the project leaders will do the right thing for the area (Simcock, 2012). However, in the Norton case, information and transparency relating to all of the community-interest energy company’s actions were considered vital for ensuring the community’s interests were protected.

Initiatives need to be embedded within the local area, allowing a strong and transparent role for local people in influencing key decisions; in the case of renewable energy projects, this includes the choice of technology, its scale and location.

Transition Heathrow highlights the political nature of community action for building resilience to climate change. While it was set up by people who came from outside the community with a particular vision of the world they want to achieve, they moved into a ward where many people were already opposed to the expansion of Heathrow Airport, though not necessarily for the same reason. While the activist group that set up the initiative is campaigning against the expansion of Heathrow Airport and its consequences for climate change, the local council is concerned with local consequences but is not opposed to airport expansion *per se*. This has enabled alliances to be built with individuals and organisations that want the same outcome (the prevention of the local consequences of the airport expansion), even if the underlying rationale is different.

While it appears that decisions on Grow Heathrow’s overall direction, as well as day-to-day organisation, are taken by those actively involved in Transition Heathrow, activists did consult the community about

their plans to squat the site, and they were accompanied by local residents when they moved in. One interviewee feels this helped to 'embed the project in the local area, a sort of sense of legitimacy in the area'. He believed they had gone from being regarded to some extent as 'outsiders' to 'local residents' as they developed friendships in the community, as endorsed by local resident, Alan Boyd:

"Some of the locals, most of the locals probably, were probably a bit suspicious about hippy types coming in and squatting, but within weeks they really became a valued part of the community and everyone was going around saying, "Aren't these people lovely? Aren't the police being horrible to them?" They really got embedded in the community quickly and they supported us with our campaign against the runway and it's just grown from there. They're a really central part of the community now; everybody loves them!"¹²

As a community within a community, they have also managed a sustained presence for five years, which has perhaps helped them to become seen as part of the wider community, although the transience of residents in Grow Heathrow and in the Heathrow Villages ward has made maintaining relationships challenging. It also highlights the issue of nurturing the personal resilience of the organisers of such community action, an aspect that the Transition Network has picked up on generally in the work of Transition initiatives, and which they attempt to provide support with. Grow Heathrow itself appears to have become a space for other activist groups to plan, share and possibly recharge.

Looking at the challenges faced by an 'outsider', these may not differ significantly from those that an 'insider' or local organisation/group might face (e.g. requests for information and transparency), though they are likely more onerous to deal with, due to the increased level of uncertainty introduced by the lack of familiarity. While establishing trust may be more demanding for an outsider, the Heathrow case study demonstrates that if timely, appropriate and adequate engagement with locals happens, an outsider can eventually be regarded as an insider. What is more, an outsider can bring in crucial knowledge, experience, expertise, energy and commitment, mobilising and pulling together local resources to develop resilience.

8 Governance and the roles of different stakeholders in developing community resilience

Box 8: Key messages on governance and the roles of different stakeholders in developing community resilience

- **There is no clear indication of whether the type of governance structure enables or hinders the development of community resilience, but a flexible approach that connects with local realities is linked to wider approaches to climate change, facilitates learning and enhances community cohesion.**
- **A combined community-led and institutional-led approach is essential** to developing effective community resilience in the long term and helping to ensure that all areas that are climate vulnerable receive support.
- **A shared agenda and close relationship between stakeholders** tend to support the development of a successful partnership and/or initiative.
- **A key role for national government is in sending a signal of intent, setting an enabling policy framework and funding activity.**
- In the UK the removal of the statutory requirement for local authorities to address climate change, and a lack of capacity and funding, appear to be making it more difficult for local government to assume the leadership role seen in other countries.
- **Civil society organisations (e.g. NGOs, voluntary and community groups)** are often an important broker between communities and institutions.

One area of capacities Cutter *et al.* (2010) consider important in building resilience are institutional arrangements, groups and actions set up to facilitate citizen engagement both in working with and challenging existing structures, in order to address consequences of climate change. Bahadur *et al.* (2010) further suggest a high level of diversity of participating stakeholders is also fundamental, as each of them performs a different function in building resilience. The stakeholders emerging from the literature and practice review of climate change community initiatives include the following:

- central government;
- local government;
- government agencies and other public bodies;
- NGOs and charitable organisations/institutions;
- community groups/organisations;
- members of the public (citizens); and
- private companies.

In this review there has been a focus on actions that happen in partnership between citizens and other institutions/organisations, in order to consider the links between the formal and informal processes and structures concerned with building community resilience. They may have central or local government funding and be more or less networked into wider institutions of governance.

Stakeholders' capacities and strengths

Evidence on governance for resilience/adaptation to climate change stresses the importance of links between community groups, local councils and national governments, in order for measures to be effective: 'the types of adaptation measures implemented primarily from the top down may not promote resilience in the long term; likewise those measures implemented from the bottom up require some level of collaboration from the top to maximise their effectiveness' (Amaru and Chhetri, 2013). This echoes Ebi and Semenza (2008) and Ingold *et al.* (2010), who also concluded that there is the need for both grassroots action and top-down interventions. Castan Broto and Bulkeley (2013) found evidence of the rise of non-state actors in leading interventions or experiments, as well as the importance of partnerships.

A key theme emerging is that interventions by partnerships are more successful as they combine the positive elements of individual actors and eliminate the weaknesses of single organisations (Castan Broto and Bulkeley, 2012; Ebi and Semenza, 2008; Ennis, 2013; Feola and Nunes, 2014). Informal organisations and NGOs often have knowledge and relationships with the community that could 'extend the operation of the state' (Castan Broto and Bulkeley, 2012) and help build consensus. Ennis (2013), described the 'ideal characteristics of a new governance model' for Transition initiatives, with reference to a 'Transition Council that is participatory at all levels and open to community-led ventures'. In such a Transition Council 'ideas and efforts would come from [a] local community, assistance in planning, organisation and funding would come from [a] council and would enable community groups such as Transition Towns to develop bottom-up responsibility' (Hopkins, 2008).

Evidence suggests that community actions in addressing any consequence of climate change and in any locality benefit from building on pre-existing partnerships or linkages, such as with local government, national agencies, emergency services or other voluntary and community groups (CLS Climate Change Network, 2014; Cinderby *et al.*, 2014; DECC, 2012; Wilding, 2011). This was a deliberate focus of DECC's Low Carbon Communities Challenge and was identified as a key to the success of Sustain Eden in Cumbria, which builds on previous flood work with the BLF to link local authority flood emergency response plans to community resilience activities, and requires work with statutory agencies to develop a joined-up community plan:

As a result of the project activities, partnerships have been built between community groups, local councils, emergency services and organisations such as the Environment Agency.... The community projects have built their profile and contacts over the past year and are now more engaged with decision makers in the area. This is enabling some projects to attempt to influence these local climate change adaptation approaches.

CLS Climate Change Network, 2014

Without top-down intervention, there can be a danger of a growing gap between those areas with pre-existing community capacity and good partnership working, and those areas without those capacities, leading to different levels of local resilience to the consequences of climate change.

The relationship between stakeholders

The closeness of the relationship between individual actors and the existence of a shared agenda can have an impact on the success of an initiative. In the UK, while some local authorities have adopted motions in support of Transition, this does not appear to have led to any more formal relationships (Coke, 2014). However, Transition groups do develop links with their local councils, and Feola and Nunes (2014) concluded that those Transition groups that have formed closer links with their councils have probably tended to be more successful. Coke (2013) further found that the closeness of the relationship depended on how radically challenging the Transition initiative was to the council's agenda, together with the personal relationships developed with council officers.

For instance, the approach taken by Transition Heathrow to build community resilience has largely focused on strengthening social and cultural capital. This is done by providing a supportive space where local residents can come and discuss plans for community action, and running workshops to help participants develop practical skills to resist airport expansion, or to live in ways that are seen as more sustainable. By building relationships with local power holders, in particular with the local Member of

Parliament (John McDonnell MP), engaging with the local council and Neighbourhood Plan as part of the Heathrow Villages Planning Committee, and highlighting the plight of the Heathrow Villages and themselves in the national media, they have been able to use this political capital to survive.

While members of the local community have used these facilities, it is not clear how many have taken advantage of these opportunities and what impact they have had. Anecdotally, it can be seen that some local people feel grateful for the presence of Grow Heathrow in face of the threat of airport expansion. The provision of a space to meet, as well as to grow vegetables and fruit locally, is also contributing to the infrastructure capacity of the community, as described in Cutter *et al.* (2010).

Partnership and governance modes

A number of authors have suggested the need for new governance models. Hartz-Karp and Meister (2011) suggest that a more radical redesign of engagement and governance will be critical in order to achieve community resilience. They suggest the need for collaborative governance 'involving the deliberated wisdom of ordinary citizens' and provide an example of an initiative in Western Australia. In the context of coastal erosion in New Zealand, Hayward (2008) suggests the need to rethink democratic processes: 'this includes revisiting concepts of scale in decision making (both spatial and temporal), procedural justice, and linkage (between local, regional, national and international governments, citizens, non-governmental organisations and the private sector)'.

Castan Broto and Bulkeley (2013), in their review of urban climate change experiments¹³ in more than 100 cities worldwide, described the partnerships, leading actors and modes of governance¹⁴ that enabled the experiments. Their research revealed the following:

- Forty seven per cent of experiments involved some form of formally recognised partnership between actors at different governance levels, suggesting that an increasing level of co-operation is necessary to address climate change.
- Local governments have a prominent role in leading 66% of urban climate change experiments. The most common forms of partnership are those in which the local government leads with either private actors (112 experiments) or civil society actors (44 experiments).

According to Bulkeley and Kern (2006), municipalities can deploy four modes of governance:

- **self-governing** – changing how their own operations are managed, in order to 'lead by example';
- **provision** – greening infrastructure and consumer services provided by different authorities;
- **regulations** – enforcing new laws, planning regulations, building codes, etc.; and
- **enabling** – supporting initiatives led by other actors through information and resource provision and partnerships.

The majority of initiatives reviewed (41%) fall under the provision category. Another 30% are enabling. As might have been expected, partnerships favour enabling initiatives and, interestingly, regulation becomes a less likely mode of governance when a partnership is in place (Table 8).

Table 8: Distribution of initiatives in terms of leading actor, partnerships and mode of governance (Castan Broto and Bulkeley, 2013)

	Mode of governance				Total
	Enabling	Provision	Regulation (hard and soft)	Self-governing	
Leading actor					
Civil society	26	15	3	7	51
Local government	117	160	74	62	413
Other government	22	29	9	6	66
Private	26	53	2	16	97
Partnership					
No	87	134	66	43	330
Yes	104	123	22	48	297
Total	191	257	88	91	627

Looking at these findings in conjunction with findings from UK literature and evidence reviews, interesting points are emerging.

Governance modes across the cases studies

The case studies reveal different types of governance structure, though there is no clear indication if any of these enable or hinder the development of community resilience to climate change. Adopting Bulkeley and Kern's modes of governance categorisation (2006) described above, we could classify the four case studies in this review as enabling, with the exception of Transition Heathrow, which would more accurately be described as self-governing.

The governance structure of the Llanelli programme in the Cynefin case study, for instance, takes an inclusive and open-ended approach, involving multiple stakeholders with roles that can fluctuate depending on circumstances and desired outcomes. Generally the Place Coordinator has a facilitator role that allows them to work with all stakeholders in order to understand their issues and find solutions to improve their surroundings. Communities and stakeholders are perceived to be driving activities on the ground. At a policy level, the town council is seen as being an active partner with an ear to the ground, but not a champion with a strong influence on the direction of the activities. In this sense, the Welsh Government provides the main steer at the management level for the direction the programme is taking. While local authorities can promote consistency and sustainability, and provide support (financial and other), it is important that these are offered (and not imposed) without strings attached, and with an understanding that flexibility and freedom are necessary for community actions to successfully work towards building resilience.

While all of the 13 FRCP projects across England involve some degree of partnership working, the number and range of partners varies considerably, with some including NGOs and voluntary organisations, while others bring in other local authority departments and national agencies, such as the EA. Three pathfinders have included community flood groups in their governance structures. This indicates a formal involvement of the community, which should increase resilience more widely. Overall, effective partnership working is recognised by pathfinders as leading to success, and the establishment of flood groups has been seen to facilitate multi-agency, partnership working; all pathfinders reported setting up flood groups as a key success of the first year.

Having high-level support for pathfinder projects from within local councils and government agencies has been seen to be essential, particularly with acknowledgement of the amount of time it takes to implement interventions and build community resilience. The majority of initial pathfinder successes were reported where:

- systems are being built to embed pathfinder projects and outputs within the local council and government agencies;
- proactive linkages and open communication channels are being facilitated by an intermediary agent (such as the NFF) between community members, local authorities and contractors; and
- council representatives are engaged members of pathfinder steering groups, involved in decision-making and listening to communities.

To accurately measure the level of success achieved would require further context and information on their starting points. It is not fully clear what relationships were already established and what conversations had already occurred between the parties.

In general, there is not enough evidence to draw any conclusions on a specific mode or structure that works, but some characteristics can be identified as factors of success: flexibility, community participation and partnership working. These can be found in different modes/models of governance. Once the evaluation of the pathfinders project is complete, it may be possible to say more about how the different models have worked and the associated outcomes.

The role of central government

Central government does not appear to be a common actor or leading partner in community initiatives on climate change in the global review by Castan Broto and Bulkeley (2013). This may also be true in the UK, as community resilience to climate change is not currently considered a clear government priority. Though evidence is limited, what is clear is that central government can have a role in providing the 'signal' and putting in place an enabling policy framework for such initiatives to emerge, as well as funding for community level projects.

This review of the evidence has shown that the Pitt review (2007), undertaken as a result of the 2007 flooding in the UK, combined with a focus on community resilience, to have been key drivers for 'the Environment Agency and emergency flood responders to work more closely with communities and to encourage people to get involved in volunteering' (Forest Research, 2015). Central government has also provided the funding for the FRCP. The pathfinders have been able to move action from a reactive mode into a more proactive, planning mode because of their focus at the local level. However, one of the key aspects of that enabling framework, funding, has now ended, and it will be interesting to see how far activities that have been started under the pathfinder programme are sustained into the future. Similarly, a supportive funding framework nationally has been important in the development of community energy schemes, but policy changes (for example, to feed-in tariffs) may affect this in future, and other options, including the use of community finance through share schemes, are becoming increasingly important.

The role of local authorities

Though Castan Broto and Bulkeley's international review (2013) portrays local authorities as the leading actor in the majority of cases internationally, the UK presents a different picture. CAG Consultants (Jones, 2015) found that only 23% of local councils across the UK had signed up to the Climate Local programme and produced an action plan outlining commitments on carbon reduction and/or climate resilience.

The lack of initiative from local authorities in the UK could be attributed to the lack of a mandate or statutory requirement for action to address climate change, and also to a lack of capacity to undertake initiatives without additional funding, given current spending cuts. Funding cuts and reductions in staffing levels coinciding with increased responsibilities have sapped institutional capacity and appetite to address climate change risks (Porter *et al.*, 2015). Most action in the UK has been supported by funding secured either through a central government scheme/programme (e.g. Defra's FRCP; DECC's Low Carbon Communities) or through external funding from a charitable trust (e.g. Carnegie Trust, Esmée Fairbairn Foundation, BLF, etc.). Unfortunately, information on the funding of existing activities worldwide is fragmented (Castan Broto and Bulkeley, 2013), not allowing any conclusions to be drawn on the importance of funding as a factor in explaining the leading role of local authorities.

Regardless of whether or not local authorities are a leading actor, they are often a crucial actor in partnerships aiming to develop community resilience. In a review of food growing projects in Brighton and Hove, Rebecca White notes that one of the 'key ingredients' of developing resilience was the Brighton and Hove local council, in terms of providing a 'stable and supportive planning framework', 'recognition' and 'economic and in-kind support'.¹⁵ Similarly, local authorities have acted as a broker in the Cynefin case study establishing the Place Coordinators, who have been a catalyst for action in the pathfinders and have to some extent supported the Grow Heathrow initiative. On the contrary, local planning authorities mirrored the distrust of local community and companies in the Norton case study.

The role of civil society organisations

Civil society organisations¹⁶, e.g. non-state actors like NGOs, international foundations and community groups, are increasingly involved in responding to climate change (Bulkeley and Newell, 2010), giving rise to partnerships. Hargreaves *et al.*'s (2013) analysis of 113 case study reports about community energy projects in the UK provides useful information on who communities are partnering with. They found that, on average, three partners were mentioned per community energy project; voluntary and community organisations were most commonly identified as partners (58%), followed by local authorities (49%) and private companies (49%). A significant point to note is that a very wide range of partners were mentioned (schools, faith groups, local libraries, housing associations, etc.).

Emerging from the UK review of community action, we also found the role of intermediary linking organisations to be a particularly important one, many of whom are civil society organisations.

The role of intermediary organisations

Intermediary organisations, especially civil society organisations, are often crucial in linking communities and institutions. Working on the ground, they build a relationship between the local community and other stakeholders facilitating the establishment of trust and co-operation. Intermediary organisations can have a role in partnerships, as well as less formal forms of co-operation. They can play various roles, from connecting stakeholders and agendas to convening and brokering partnerships, and facilitating shared learning.

Connecting stakeholders

A key success factor in communal food growing work in East Sussex¹⁷ was found to be the interdependence between food-growing gardens and a network of affiliated intermediary organisations with multiple roles (White and Stirling, 2013). This was said to foster longevity of the activity, while also enabling broader-scale change in food systems at a local level. In Brighton and Hove, such an intermediary was the Brighton and Hove Food Partnership,¹⁸ which was found to be particularly important not only in linking actors and groups, but also in helping to develop a collective identity across growing spaces and groups in the city, in light of the differing roles food growing played for different stakeholders (e.g. well-being, skills development, etc.). Finally, White notes that the partnership also '[at]tended to local systemic barriers (...), like planning, funding and linking volunteers', something the food growing groups would not have the time or resources to deal with.

The implication of this is that government and funding organisations, and associated policy, need to support intermediary organisations playing multiple roles and that these organisations, with a broad remit, but working at the local scale, can be an important part of civil society-based innovation systems.

Convening and brokering partnerships

The Liverpool pathfinder project has community engagement at the heart of its approach. Members of the community are involved in, and take responsibility for, managing flood risk in co-ordination with institutions such as the EA, the local water company and relevant departments within the local authority.

The NFF is the partner bringing these institutions and members of community together. The project has also involved the creation of the first Flood Action Group (FAG) in Liverpool, using an approach to community engagement developed by the NFF. Further, the NFF-appointed engagement officer has

been valuable in ensuring any conflicts between the different groups and individuals involved were managed and not allowed to derail the process.

“There was already a level of informal networking between residents and between residents and Council Officers but this has grown in dignity and strength. The relationship between the residents and council officers has matured.”

Interviewee 2, Liverpool pathfinder case study

Connecting agendas

Another example of the importance of intermediaries is the Cynefin programme, which actively brings together local people, community groups, businesses and organisations that deliver services to improve where they live or work using Place Coordinators.

The programme has an inclusive approach, working with multiple stakeholders ranging from the private sector and NGOs to universities. To facilitate and manage links between stakeholders, the Cynefin programme has nine Place Coordinators working on the ground in the localities, making place-based improvements and influencing policy at local level. The Place Coordinators have the freedom to engage with a wide range of stakeholders, to find what the needs of a community are and how those needs can be delivered. Importantly, it is the Place Coordinator who strives for a mandate from the communities to help make connections and find how information, policy and funding can help to deliver the objectives on the ground. Although the process is overseen by the management team of Cynefin, the work on the ground is mainly directed by the communities:

“Welsh Government has shown us the confidence and the trust that we can find solutions by working on the ground with communities. So we’re not driven by pressures above, but rather a combination of bottom-up and top-down processes where both have a role to play in making places better.”

Interviewee 1, Llanelli Cynefin case study

The delivery of the initiative is very open-ended: once Place Coordinators have established stakeholder visioning and engagement and have gained an understanding and a mandate from the area about what they want to achieve, they develop targets and objectives for the work. The Cynefin initiative has built-in flexibility so that Place Coordinators can change their agenda to respond to any opportunities and partnerships that arise and fit with the aims of their communities.

Sharing and spreading learning, and facilitating innovation

Hargreaves *et al.* (2013) focus on ‘grassroots innovations’ and introduce the idea of boundary organisations, building on niche theories that see innovations as coming from small scale and relatively protected niches. They go on to emphasise the need for fundamental changes, ‘whether in technologies and infrastructure or in social norms, values and institutions’, as opposed to incremental improvements. Intermediaries – boundary organisations that play a bridging role – are seen as key to ensuring that individual projects and their experiences get communicated and exchanged, gradually forming a shared trajectory and enabling the innovation to spread. For instance, the NFF, the main intermediary in the pathfinder case study and scheme, has organised a conference aimed at disseminating the findings and lessons learned from the FRCP scheme among communities and practitioners.

Intermediary organisations’ work includes aggregating and making available information about grassroots innovations, providing training and advice and helping to initiate new projects. Nonetheless, in interviews conducted by Hargreaves *et al.* (2013) with 15 representatives of UK intermediary organisations on community energy innovations, interviewees acknowledged the difficulty of replicating innovations, particularly given the importance of local context. They suggested that while sharing information about technical aspects is one part of their work, a critical contribution they make is to give local projects the confidence to be able to address locally-specific challenges as and when they arise.

Overall, intermediary organisations appear to be valuable for community initiatives building resilience, regardless of the scale of initiative, theme (energy, food, flood), governance arrangements or type of partnership. However, Cinderby *et al.* (2014) warn: ‘Over reliance on outside agencies does not instil

resilience in communities.’ Increased self-determination of a community is an important aspect of building community resilience, and a balanced partnership is needed for a successful initiative.

9 The relationship between vulnerability and resilience

Box 9: Key messages on the relationship between vulnerability and resilience

- **Social vulnerability of communities to general or specific issues is not just the opposite of resilience:** it is possible for a person or community to be vulnerable to some shocks and stresses in some ways, but also to be resilient through having the capacity to adapt or overcome that vulnerability.
- **Relying on community action to address the consequences of climate change may reinforce social inequalities.** A positive framing of resilience can overemphasise the ability of those dealing with shocks and stresses to be able to cope, and shifts responsibility for dealing with crises away from the state. The costs of coping and the burden on some groups in the community can be overlooked.
- **There is a need for government direction if action on resilience is also going to address vulnerability and social justice:** unless community action is directed to address underlying social vulnerability, then it may not happen. There is a role for government to develop a strategic approach for action on resilience to climate change that addresses climate vulnerability and builds on community capacities. This suggests a tension in devolving responsibility for action to communities.
- **Resilience should not reproduce social vulnerabilities:** resilience as 'bounce-back' in the context of shocks is not enough for longer-term management of climate change, particularly if high levels of vulnerabilities exist in a community.

There is a wide range of research on what makes people vulnerable in the context of climate change (see, for example, Lindley *et al.*, 2011). This evidence review recognises that the social vulnerability of communities to different consequences of climate change is not just the opposite of community resilience. It is possible to be vulnerable to some shocks or stresses in some ways, but resilient in others. For example, a person on a low income who is exposed to flood risk and cannot afford flood insurance could be resilient due to effective flood defences, an early warning system, and fast emergency service responses that reduce flood damage and associated costs.

Walker and Burningham (2011) consider the social vulnerabilities of individuals to reflect and reproduce the existing pattern of inequalities in society, or systemic inequalities. Their work shows that those who are most vulnerable to climate change consequences will, in many cases, be those who are most vulnerable to other negative impacts (i.e. people who are already affected by poverty, poor health or disabilities). Cutter *et al.* (2003) extend this to place-related inequalities as well:

Social vulnerability is partially the product of social inequalities – those social factors that influence or shape the susceptibility of various groups to harm and that also govern their ability to respond. However, it also includes place inequalities – those characteristics of communities and the built environment, such as the level of urbanisation, growth rates and economic vitality that contribute to the social vulnerability of places.

In relation to earthquakes in Christchurch, New Zealand, Hayward (2013) also highlights the issue of underlying inequalities and how they exacerbate the social vulnerabilities of individuals that emerge within a disaster: 'in reality, our internal relationships of class, gender, and ethnic inequalities also greatly exacerbate community vulnerability'. Vulnerability is a function of the exposure and sensitivity of a system, and:

Vulnerability is the pre-event, inherent characteristics or qualities of social systems that create the potential for harm.... Resilience is the ability of a social system to respond and

recover from disasters and includes those inherent conditions that allow the system to absorb impacts and cope with an event, as well as post-event, adaptive processes that facilitate the ability of the social system to re-organize, change, and learn in response to a threat.

Cutter *et al.*, 2008

Menoni *et al.* (2011) state: 'Sometimes getting back to the exact pre-event conditions is just the opposite of resilience, particularly when [a] high level of vulnerabilities characterized that condition.' Ultimately, vulnerability research needs to be pulled through more clearly into the area of resilience for resilience building to be effective. In addition to the potential effect of pre-existing vulnerabilities within communities on their ability to respond to, recover from and adapt to climate change, recent work shows that approximately two-thirds of the most socially flood-vulnerable places in the UK are also socially heat-vulnerable, and that many socially deprived neighbourhoods are also socially vulnerable to climate change. Lindley *et al.* (2011) suggest:

Adaptation policy has focused on personal factors (such as health and age) and environmental features (such as flood prevention) but also needs to address social factors (such as income inequalities, the existence of social networks and the social characteristics of neighbourhoods).

This means that some parts of the UK may need more support than others to respond to the challenges of climate change, and to avoid its effects exacerbating poverty and disadvantage.

Evidence of vulnerability in action

The review has found that the term 'vulnerability' rarely features in evidence relating to community food or energy practice and climate change, except in relation to food security and fuel poverty. Building 'social resilience' is a core aim of many community food growing actions, which often target areas of social deprivation and, as White and Stirling's (2013) work in East Sussex and the Local Food evaluation report identified, can provide 'a vehicle for a number of social benefits' (Kirwan *et al.*, 2011).

Regarding community energy, Bulkeley and Fuller (2013) address vulnerability, specifically energy vulnerability, in their report *Low carbon communities and social justice*.

This focus on the need to address existing energy vulnerability has emerged over time, as the needs of marginal groups have become recognised. One example of this is the DECC Low Carbon Communities Challenge, where the bid initially targeted housing association properties with PV as it was felt that 'their residents were representative of those most in need or most likely to benefit'... However, 'fuel poverty' remains a rather circumscribed concept, and wider issues of vulnerability and inequality may pass unnoticed as a result.

In addition, IPPR's evaluation of the British Gas Green Streets challenge refers to 'social vulnerability' on two occasions, but it is not a core theme in this report or more widely across the evidence base on community energy generation and efficiency actions (Platt *et al.*, 2011).

Box 10 illustrates the case of the Norton community wind energy project, where addressing existing social vulnerabilities is one of the objectives of the project founders.

Box 10: Learning from the case studies: Norton community wind energy project

Social and economic regeneration is one of the main project objectives of the community-interest energy company that initiated the Norton community wind energy project. By ensuring profits stay in the local area and providing substantial finance for low-carbon projects, the project developers aim to generate jobs and investment that can rejuvenate the local economy. As one of the energy company directors interviewed said, community resilience is here partly about 'making local jobs in small local industries' and providing the area with a degree of economic self-sufficiency. To some degree, this aim was also related to dealing with existing vulnerabilities in the local area – parts of the parish are relatively socio-economically deprived, and the company's leaders saw an opportunity to remedy this through a community wind energy project:

"Now, the project we're working on... it's in an area of South Yorkshire that's quite deprived, and has been ravaged previously by capital through coal mining ... So, you know, there is an opportunity to do it in a different way, there's an opportunity for capacity building, social action, social change ... and our project is very much aimed at identifying a program of sort of regeneration initiatives and social initiatives, environmental initiatives and projects, to help change this place for the better."

Community-interest energy company director 2 – quoted in Jeong *et al.*, 2012

A greater number of references to vulnerability were found in evidence relating to flooding and wider community resilience practices. For example, the *Climate change summary* (CLS Climate Change Network, 2014) produced as part of the BLF's Communities Living Sustainably (CLS) programme, outlined projects that have identified three groups of people vulnerable to climate change in their communities:

[...] people whose livelihoods are at risk (farming, sea fishing, e.g. CLS in Dorset), people who do not have resources (low income e.g. Greening Wingrove, Newcastle), or particular groups that face social isolation (older people, single mothers, mothers who do not speak English – across projects).

However, in such evidence, 'vulnerability' was often seen to be used in opposition to 'resilience', with some reports explicitly expressing a preference for the latter, which is indicative of the debate that exists in both the literature and action over the two terms. The question is raised as to whether vulnerability is addressed at all if community actions take a resilience approach. The evidence suggests that some attention has been given to vulnerable groups by emergency planning agencies.

The overall lack of focus on social vulnerability and emphasis on resilience by the reviewed evidence of community action is likely due to the specific focus of the search on community resilience and vulnerability linked to climate change. Further research is needed, but evidence seems to suggest that unless community action is directed to address vulnerability, then it is the decision of community groups and local authorities as to whether this occurs, and it may not happen. This is where there is a role for government to direct action. This suggests a fundamental tension in devolving responsibility for climate change action to the community level.

The results have shown that identifying social vulnerability has become codified in emergency behaviour; it is part of the formal response process now to ask 'Who is vulnerable?' to the shock, such as a flood event, but from the analysis undertaken for this report it is difficult to discern the extent to which community food and energy projects are trying to address underlying capacities and vulnerabilities. Further review and assessment of the cumulative impact of community action relating to climate change is needed, but it will be difficult; careful consideration of the indicators employed to measure this will be essential.

Resilience and localism approaches: implications for vulnerability and social justice

Framing community actions as resilience building can shift analysis away from vulnerability (Cannon and Muller-Mahn, 2010), and community actions away from addressing social vulnerabilities and inequalities. A positive framing of resilience, with its suggestion that people can have agency in the face of difficulties, overemphasises the ability of those dealing with shocks and stresses to be able to cope, and shifts responsibility for dealing with crises away from those in power. Further, structural vulnerability is often not under an individual's control, and will depend on the location and power relations within a system. The risk of taking this kind of approach is that the costs of coping and the burden on some groups within the community can be overlooked (Harrison, 2012). Furthermore, pre-existing conditions that may exacerbate climate change consequences or impede transitions towards a low-carbon society can be forgotten, e.g. social inequalities and power relations between actors.

With this in mind, there are particular implications for social inequalities in the shift of responsibility for climate change action (especially related to flood risk management, and energy generation and efficiency) to the community level implicit in the localism approach. Bulkeley and Fuller (2012) question the justice principles and the expectations of this shift:

This shift from an emphasis on individual action to community responses has been portrayed as one that will enable a more just response to climate change. Policy and actions will be more inclusive, responsibilities for action may be shared, and the risks and benefits of the low carbon transition more evenly distributed, so the argument goes.

However their evidence suggests that there is not yet recognition at policy level of the inherent differences in communities' levels of capacities and resources. Their review of nine UK low-carbon community programmes, representing a range of different approaches to climate mitigation at a community level, suggests that there is no one single 'type' of low-carbon community: 'various types are emerging, reflecting the diverse drivers of government, private sector and grassroots organisations.... And it is evident from all of the programmes that the community is recognised as a critical site for addressing climate change' (Bulkeley and Fuller, 2012). There cannot be one single type of low-carbon community because context, characteristics, capacities, and social and place inequalities will differ in each community. All nine programmes reviewed by Bulkeley and Fuller (2012) 'ultimately place responsibility for climate mitigation on the communities themselves' and 'highlight the positive benefits of low carbon communities, including local investment, job creation, fuel poverty and climate change'. Broad assumptions are made that all communities are equally equipped to act, that any costs and benefits of community actions will be evenly distributed, and that community action will address social inequity.

As Preston *et al.*'s (2014) review of social justice and climate change warns:

[...] lower-income and other disadvantaged groups contribute least to causing climate change but are likely to be most negatively affected by it; they pay, as a proportion of income, the most towards implementing certain policy responses and benefit least from those policies; and their voices tend to go unheard in decision making.

Social factors (i.e. social, economic and place inequalities), starting point and precedence (i.e. building on existing networks, interventions, resources and flooding experience) of community actions will help to determine where a community is on the resilience 'pathway' or 'continuum', and the extent to which community members are able to act and to build resilience. This is an essential point, both in relation to planning for disaster and for a low-carbon future, as this affects communities' ability to respond and to cope with climate uncertainty.

Building community resilience to address climate change consequences will draw on, as well as develop, capacities of individuals and communities. Social vulnerabilities should not be reproduced. Frameworks that enable the analysis of the capacities and vulnerabilities of a community could be used at the start of an intervention to develop resilience to climate change. For example, Cutter *et al.* (2010) provide a useful framework for thinking about the specific types of skill and capacity that might be needed to address

climate change shocks and stresses, while Transition provides examples of skills and capacities for moving towards a low-carbon future.

Both resilience and vulnerability need to be understood in order to be able to develop community capacities for reactive and proactive responses to climate change consequences. To underplay or ignore social inequalities and power relations between actors within the flood risk system would be to provide an incomplete analysis of the issues, and any solutions developed to address those issues. Ultimately, resilience will mean different things to different people in different places, and it is important that resilience building activities start from people's awareness of their strengths and vulnerabilities if they are to be effective and avoid reinforcing existing inequalities.

10 Conclusions and key messages

This section draws out general conclusions and lessons useful for developing future community resilience initiatives in the context of climate change and the transition to a low-carbon society, and for refining current activities. The conclusions also address the particular needs of disadvantaged groups and the challenges of involving such groups in community resilience to climate change actions.

The concept of resilience in the context of climate change is used in a number of different ways by different UK Government departments, practitioners and academics and, as such, it is contested. However, the way it is defined is central to where action is directed and how actions at the local level are focused. Currently, where the concept is used in practice, it tends to provide only a framing, rather than being used to assess project progress/success, or as a way to develop interventions.

Clearly there is a patchwork of activity being carried out and this review has provided a snapshot of activities where it has been possible to get details. There is community action explicitly on climate change/low-carbon transitions being carried out by a variety of actors within the UK, but it is not usually framed as resilience, possibly because most of it is focused on mitigation rather than adaptation. Resilience is more commonly used to refer to responding to emergencies and direct impacts of extreme weather associated with climate change, rather than the longer-term societal ability to deal with other indirect impacts of climate change, or a shift to living in a lower-carbon economy and society.

Also there is community action related to food growing, and energy generation and efficiency, which some of the climate change groups (particularly Transition) might argue contributes to community climate change resilience, but for which combating climate change may not be a goal at all.

Finally, community flood risk management is being framed by Defra as resilience, but still sits largely within the emergency planning arena and does not link into other government policies on climate change.

However, the value of taking a resilience approach to climate change in this review has meant that these different actions are being considered in relation to each other. While those involved are not making links between the actions, and between the actions and climate change, making those links, as this report has done, is a valuable step forward in understanding the pattern of resilience to climate change in the UK.

The framework of analysis proposed at the end of Chapter 5 included three components:

- taking a capacity/resource approach to understanding how activities might be contributing to developing community resilience in the context of climate change;
- the value of distinguishing between proactive and reactive modes of resilience; and
- the importance of community engagement and multi-level governance.

This evidence review allows us to draw a number of conclusions in relation to these components.

Taking a capacity/resource approach

Taking a capacity approach is useful in order to understand how activities might be contributing to developing community resilience in the context of climate change. More specifically, there is some evidence that in order to successfully build community resilience within the context of climate change, possession of a certain level of capacity is needed in all five categories of resilience: social, economic, infrastructure and institutional resilience, and community capital.

In terms of the interactions between the different types of capacity, we have seen how institutional capacity and community capital interact: setting up groups focused on activities such as flood risk management, community food growing and community energy not only develops social networks between citizens and develops personal relationships, but inevitably these activities bring those networks

into contact with the governance structures and institutions in local areas. The interface between community networks and institutional networks enables local actions to become part of wider governance structures. There is some confirmation of the suggestion (Cinderby *et al.*, 2014; Young Foundation, 2012) that community capital (i.e. networks, trust and relationships in a local area) is a core capacity without which these types of action are not like to succeed. Community capital is a key aspect that is developed through community engagement, which is therefore a central process for developing climate resilience.

Distinguishing between proactive and reactive modes of resilience

Of the three areas of community action in the context of climate change focused on by this evidence review, community actions relating to food growing seem to have the greatest potential for engaging people in community resilience to wider climate change consequences, closely followed by community action on energy. Community flood risk management actions currently seem to work primarily in isolation, but the TCV, and Liverpool and West Sussex FRCP projects, offer innovative approaches. The potential advantages for flood risk management are the emergency planning structures (e.g. Local Resilience Fora, Community Resilience guidance, etc.) that are in place, with the Cabinet Office's emphasis on developing community resilience to a whole range of shocks. However, while this may help communities to move to consider a range of shocks, it is not framed in relation to climate change and does not necessarily mean that links will be made to transitions towards a low-carbon society. Consideration of how to link this programme to the wider context of adaptation to climate change would be useful further research.

Broadly, the work within flood risk management sits between the reactive 'bounce-back' and proactive 'adaptive' approaches to climate change. It is less clear how to categorise food growing and community energy projects. This is because while they are broadly proactive, the diversity of drivers and complexity of outcomes make it difficult to say that one mode fits all approaches. The Transition movement model is an important learning tool, because Transition initiatives have broader aims related to climate change and peak oil, and tend to focus on multiple areas (that is, activities may focus on a range of areas, including food growing or energy). The extent of influence of a group will quite often go beyond its members. These examples indicate that successfully building community resilience to climate change, going beyond specific consequences, is about having governance structures and networks in place to enable wider action.

Community engagement and multi-level governance

Community action related to food growing is seen as the area where the most community-led, bottom-up action occurs. The multiple drivers for community food growing action may mean climate change aims are lost, but community capacity is successfully developed, which could have the potential to be harnessed in response to other implications of climate change.

Community action on flood risk management is commonly driven at the community level in the first instance, by a community's experience and response to a flood event (which may be facilitated by a trusted intermediary agent such as the NFF), as well as the strong desire of the UK Government to devolve responsibility for flood risk management to communities and implicit government cuts, which reduce spending on flood defences, and national and local flood risk management agencies.

Examining the roles of different stakeholders identifies a key role for intermediary bodies that facilitate links between the informal structures of local communities and the formal structures of local and national government, as well as linking local actions to wider networks. These may be NGOs (e.g. the NFF), networks of organisations (e.g. the Transition Movement) or individuals (e.g. Place Coordinators). What is also clear is that within the current political context of localism, an emphasis on removing regulation and major spending cuts for the public sector, local authorities are unlikely to be leading these types of action, and their involvement is going to be very dependent on priorities of individual councils, pre-existing partnerships and the availability of funding. This is likely to lead to an uneven approach across the UK to mitigation and adaptation to climate change.

Despite the shift towards community responsibility for flood risk management, and also for energy generation and efficiency measures, there is not yet recognition of the inherent differences in communities' levels of capacity. This is an important point, both in relation to planning for disaster and for a low-carbon future, as this affects communities' ability to respond and to cope with climate uncertainty. Related to this is the fact that vulnerability/social justice is not central to the resilience framings, and as such there is a danger that many climate change initiatives do not reach out beyond the 'usual suspects'. Further, there is growing evidence that the context of the localism agenda, the abandonment of climate change targets at the local level and major public sector spending cuts mean that actions won't be focused on those who are climate vulnerable, and that overall, the present piecemeal approach to addressing climate change consequences and transitions toward a low-carbon society will continue.

A framework for developing communities' resilience to climate change

Finally, this work suggests that the following key components could be used as a framework to develop the resilience of communities to climate change and to move towards low-carbon futures.

Capacities/vulnerabilities

Understanding the existing capacities and vulnerabilities of individuals within local areas is vital if resilience to climate change is to be developed, and existing vulnerabilities not reproduced. There is a need for specific knowledge and skills relating to climate change consequences and moving to low-carbon communities, as well as general capacities. These should be built on existing capacities and linked with the lived experience of local citizens. Cutter *et al's.* (2010) framework was found to be useful for thinking about the specific types of skill and capacity that might be needed in relation to climate change consequences, and the experience of Transition initiatives provides examples of moving towards a low carbon future.

Engagement and empowerment of citizens

For local actions to be successful, engagement and empowerment of citizens is vital. This is a difficult area, with top-down interventions sometimes leading to communities being engaged instrumentally, as delivery agents for government policy that is unlikely to lead to success. Some community-led actions will remain outside the mainstream, but provide useful challenges to the existing status quo.

Collaborative governance

Linked to the issue of citizen engagement is collaborative governance. From the evidence review it is clear that both formal and informal structures of governance are needed for actions to be successful. Links between local groups, local authorities and boundary intermediary organisations enable the locals to be networked into wider structures, so that formal structures can provide lasting change and learning from that local activity. For example, a flood action group made up of local people who seek to develop the capacities to cope with flooding will be helped by a local authority, which then includes the measures developed within a wider flood resilience plan. However, this becomes challenging in a context where local authority and other public bodies (e.g. the EA) are facing cuts.

Catalysts for action

Through much of the community action review and our case studies, it is clear that there are catalysts that lead to actions and these can take a number of forms, including:

- key people – these can be activists within communities, and examples include Plane Stupid coming to Heathrow, as well as the Cynefin Place Coordinators and the Norton entrepreneurs;
- funding opportunities – clearly the numerous programmes that have provided funding opportunities for community groups and local government have generated actions and interventions; and

- direct experiences or threats – for example, the experience of a flood or the threat of fracking locally is often enough to bring people in a community together, and sometimes that will lead to future resilience building.

Vision – future thinking

For a step change in responses to climate change, a clear vision or direction is needed at both the local and national levels. It is clear that the UK Government has a role to play in setting that vision in terms of policy. Beyond the national government level, the Transition movement does provide a vision of an alternative society that adapts to peak oil and climate change. However, even with 400 groups across the country, this remains a minority perspective. Overall there is a lack of coherence. This means that the different parts may not add up to more than their sum.

Lack of evidence

While there are a number of frameworks and good practice, together with evaluations of large government programmes, there is still a lack of evidence of the ways in which resilience building in the context of climate change is happening at the local level; the processes and structures that are making the projects a success or failure; or the key ingredients that will deliver scalable societal change. Given also the lack of common frameworks for evaluation, it is hard to know if all these local projects and actions are coming together to constitute a significant change for the UK in terms of building resilience to the consequences of climate change and moving towards a low-carbon society.

Key findings

- Academic, policy and practitioner definitions of resilience are varied, and while common themes can be discerned, there is a lack of consensus. Currently, the policy focus in relation to community resilience is generally on direct shocks due to climate change, leading to an emphasis on emergency planning and the role of the community in relation to other institutions, particularly focusing on flood risk management. This emphasises a predominantly reactive approach. Other areas of policy are directed towards indirect shocks and stresses relating to climate change, but they are not framed as supporting community resilience, for example, the Low Carbon Communities programme, and the Community Energy strategy.
- This patchwork of definitions is echoed by the patchwork of actions being carried out in relation to climate change resilience. In the areas of community energy, food growing and flooding, framings of resilience varied, as did drivers for action; some focused on climate change, but also on building community (e.g. through food growing) and responding to a risk (e.g. flooding). Putting these all under the umbrella of climate change allows examination of gaps and, going forward, should inform an overall approach to enabling actions at the community level.
- There is a lack of evaluation data with respect to actions relating to climate change resilience. Many projects do not have the resources to carry out evaluations, and evaluations that are carried out relating to programmes of funding are often not detailed enough to draw out the subtleties of what works and what does not in practice.
- However, the availability of economic, infrastructure and community/human capacities appears to be crucial in supporting the development of resilience. Building on what already exists can increase success. It is important to understand the starting point and the capacities that are already in a community to inform action on climate change.
- Community engagement with all sections of the local community encourages understanding and ownership of actions on climate change. Effective engagement requires an understanding of the needs and concerns of the community. Local knowledge can be particularly useful in identifying the most appropriate approach to engagement, and framing the initiative in a way that resonates with members of the community and encourages more participation.
- A lack of national strategy to build community resilience to climate change means that areas of climate vulnerability are not being targeted. Many areas with climate vulnerability are also those likely

to have lower levels of pre-existing capacities that could support climate change resilience, which may mean that the most vulnerable are least likely to develop community resilience strategies.

- The localism agenda, together with the removal of targets for climate change actions and severe cuts to local authority budgets means that building community resilience to climate change is unlikely to be a priority for local authorities, with the implication that they will not be leading initiatives, and partnering only when it facilitates delivery of other statutory requirements.
- Future research could test out the usefulness of the framework developed to build resilience to the consequences of climate change and move towards a low-carbon society. That is, a focus on community capacities, empowerment of citizens, collaborative governance, catalysts for action and vision/future thinking. Investigating these in place-based analyses of the facilitators and barriers to climate resilience could be a way to progress this area.

Key recommendations

Local authorities

- Local authorities could use areas of statutory work, e.g. on flood risk and energy, to grow community resilience to a wider set of climate change issues. Furthermore, other policy agendas such as spatial planning and health could be an important route for developing clearer local climate resilience strategies and actions, e.g. to enable green infrastructure as part of efforts to support vulnerable communities, or developing heatwave plans for care homes.
- They could recognise and develop a role linking formal and informal processes of governance (e.g. between local councils and voluntary and community groups) and develop approaches to partnership-working that allow for grassroots and intermediaries' involvement, e.g. working with the Transition movement, or the NFF.
- Initial funding is a key factor for the success of community climate change resilience initiatives. In a context of shrinking local authority budgets, developing multi-stakeholder partnerships can facilitate access to alternative sources of funding.
- Community capacity, skills and networks are crucial components of resilience to climate change, and to wider shocks and stresses. Local authorities can help build this by recognising the value of community-led actions across departments, involving representatives in multi-agency meetings, and promoting links between community organisations and institutions with responsibilities for climate action.
- Local authorities could identify people and places that face high social vulnerability to the consequences of climate change, and facilitate partnerships to carry out actions to support the most vulnerable communities in developing resilience.

National government

- Overall, 'Central Government needs to provide stronger leadership on climate change adaptation to increase its political visibility and urgency amongst local government' (Porter *et al.*, 2015).
- Central government could develop a cross-government definition and approach to community resilience in the context of climate change that goes beyond emergency planning, includes a proactive focus, and clarifies the roles of different stakeholders.
- It should further develop working across Defra and DCLG on flooding, and Defra and DECC on energy and climate change, and link in DFID thinking for the next Climate Change Risk Assessment and National Adaptation Programme.
- It could also recognise that to achieve the goals of building community resilience to climate change requires a clear vision of the role of local authorities as enablers of community action on climate change, alongside the voluntary sector and members of local communities.
- It should focus programmes of grants on areas of social vulnerability and climate hazard exposure. For example, it could consider establishing a resilience funding stream with a clear evaluation programme to ensure progress is assessed.

- Central government needs to join-up policy on community resilience to climate change by looking at opportunities for resilience-building in the context of:
- measures focusing on mitigation or indirect shocks and stresses relating to climate change, for example, the Community Energy strategy and energy efficiency measures, or other social interventions; and
- emergency planning responses, where a longer-term, more proactive approach to prepare and adapt to climate change is also needed.
- For the widest range of civil society organisations to participate, the government needs to support the sector to create a national infrastructure that:
- provides information on funding opportunities and best practice to local service providers, and facilitates dialogue between all parties about needs, priorities, service design and delivery;
- assists in the formation of bidding consortia to ensure that civil society organisations of all sizes benefit from opportunities to tender for services; and
- helps service providers to demonstrate impact by providing information on measurement tools and frameworks.

Communities

- Communities can evaluate their capacities (strengths and weaknesses) and start from those points to develop new capacities in relation to climate change resilience. They can learn from existing initiatives about how to make the most of available resources, potential pitfalls to look out for, and solutions.
- They should start activities that develop community participation and networks, but have a longer-term vision, as well as building on local interests to develop interest and engagement. This may not always require a specific focus on climate change. Actions that start by dealing with a community's daily concerns and aim to increase community well-being can be more appealing than a specific climate change focus.
- Making links with key local institutions, e.g. local government, is key to developing common goals and influencing local agendas, sharing learning, and garnering input and support. Understanding the focus of the local council and framing activities to make connections with their agendas can be a useful strategy for communities to develop actions.
- Building in ways to monitor and evaluate community actions from the start will generate evidence of impact and benefits, and share learning and best practice.
- It is important for communities to recognise that:
- actions to build resilience are likely to take longer than anticipated; and
- it is not necessary to be an expert on climate change to increase a community's climate change resilience; other initiatives, such as reclaiming green space for community uses and promoting local food production, are excellent ways of building community capacities and developing resilience.

Notes

1. The reference here is to civil society organisations, which is a broad term meaning the wide range of organisations representing the interests of citizens, including non-governmental organisations, community groups and advocacy groups. It does not include individual citizens.
2. See Appendix 3 for details of workshop participants' presentations.
3. In this report, we use the term 'community' with recognition of this complexity, appreciating that any practice or intervention must unpack the specific dimensions of the community it is focused upon, since these shape the success or otherwise of the intervention.
4. E.g. www.readyscotland.org and www.walesresilience.gov.uk. In Scotland there has been some thinking around the relationship between community resilience and community development, with a briefing paper discussing key definitions produced by the Scottish Community Development Centre.
5. The Cabinet Office produces the National Risk Register of Civil Emergencies (NRR), which is the unclassified version of the National Risk Assessment (NRA), a classified assessment of the risks of civil emergencies facing the UK over the next five years. The NRR is a public resource for individuals and organisations wishing to be better prepared for emergencies. Highest priority risks in the 2015 edition are pandemic influenza, coastal flooding, widespread electricity failure and catastrophic terrorist attacks. Inland flooding, heatwaves, drought, severe wildfires, low temperatures and snow, storms and gales are also on the register, which has 19 risks in total (Cabinet Office, 2015).
6. Disaster Resilience of Place (DROP) model – see Cutter *et al.* (2010) for details. This provides a useful, theoretically grounded framework for resilience to disasters.
7. In this report the term community engagement is used as an umbrella term to reflect any actions between citizens and other organisations that meet the criteria from the International Association of Public Participation (2007) of 'involve, collaborate, or empower'. It does not include 'inform or consult'.
8. White and Stirling (2013) 'collectively term projects and intermediaries the communal growing 'niche', understanding this analytical concept to describe a hypothetical space in which innovations can be tried out and developed, at least initially away from the selective pressures of mainstream systems of provisioning. As such, a 'niche' is not objectively empirically fixed in any given setting, but depends heuristically on the purpose and level of analysis.'
9. Volunteering is defined by the Compact Code of Good Practice (the Compact is the agreement between the government and the voluntary and community sector to improve their relationship for the benefit of each other and the communities they serve) as 'an activity that involves spending time, unpaid, doing something that aims to benefit the environment or individuals or groups other than (or in addition to) close relatives' (Compact, 2005).
10. See <https://www.transitionnetwork.org/about/funding>
11. <https://www.youtube.com/watch?v=ACjQ-vqEx3g>
12. <https://www.youtube.com/watch?v=R9cQ4tDfSI8>
13. Castan Broto and Bulkeley (2013) present climate change experiments as 'interventions to try out new ideas and methods in the context of future uncertainties. They serve to understand how interventions work in practice, in new contexts where they are thought of as innovative.'
14. The study adapted the Bulkeley and Kern (2006) definition of a mode of governance as 'a set of tools and technologies deployed through particular institutional relations through which agents

seek to reconfigure the specific social and technical relations with a specific governing purpose, in this case, to address climate change' (Castan Broto and Bulkeley, 2013).

15. Recordings available at: <http://www.sustainablelifestyles.ac.uk/projects/community/resilience-and-sustainable-lifestyles>
16. The reference here is to civil society organisations, which is a broad term meaning the wide range of organisations representing the interests of citizens, including NGOs, community groups and advocacy groups. It does not include individual citizens themselves.
17. Summary and recordings available at:
<http://www.sustainablelifestyles.ac.uk/projects/community/resilience-and-sustainable-lifestyles>
18. Accessible at: <http://bhfood.org.uk/>
19. The total of 5,000 has been made on the assumption that the DECC (2014) report, as the most recent evidence of community energy projects in the UK reviewed, includes the projects cited by the other reports in the community energy category.

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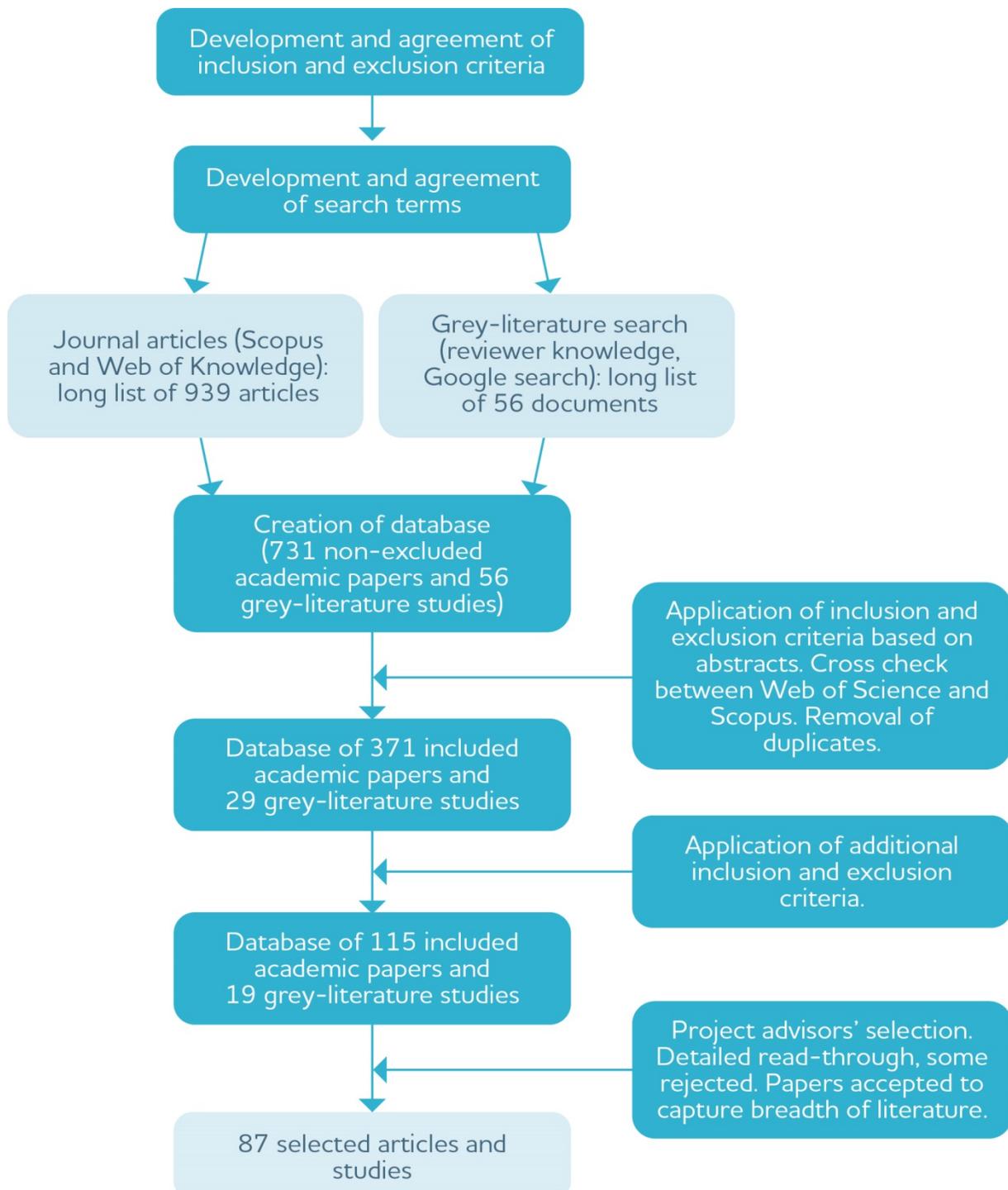
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Appendix 1: Overview of the search strategy process

Figure 7: Flow chart of the search strategy process



Appendix 2: Quality assessment proforma

Figure 8: Flow chart of the search strategy process

Quality assessment			
Number of citations:			
	Yes	No	Not applicable/sure
1. Was there a clear statement of the aims of the research? Was it related to the evidence review questions?			
2. What type of document is it?			
• Policy			
• Theory			
• Data			
• Practice			
METHODOLOGY			
3. Was the methodology chosen appropriate?			
4. What is the main method employed?			
• Qualitative (incl. interviews, focus group, dialogue, observation, workshops, panel discussion)			
• Documentary analysis (incl. evidence review, literature review, critical review)			
• Case study (incl. comparisons)			
• Questionnaire (incl. quality and quantity)			
• Geo-coding			
• Part of larger study			
• Modelling			
• None (i.e. theory or unclear)			
DATA ANALYSIS			
5. Was the data analysis sufficiently rigorous? Was it sufficiently described, and an appropriate sample analysed? For a quantitative analysis, are enough data presented for results to be valid and useful (i.e. on both the dependent and independent variables)?			
6. Is there a clear statement of findings? Whether the studies gave enough depth and detail to give confidence in their findings. Whether the studies assessed the relevance of their findings to the wider population and/or context.			

Table 9: Summary of qualitative assurance analysis

Total number of documents assessed	108										
Number of citations?	0	1 to 20	21 to 40	41 to 100	101 to 500	501 to 1000	1001 +	Unknown or N/A			
Number of documents	2	26	8	8	12	4	3	45			
Was there a clear statement of the aims of the research related to the evidence review questions?	Yes	No									
Number of documents	108	0									
What type of document is it?	Policy	Theory	Data	Programme evaluation/ report	Practice						
Number of documents	44	60	11	23	43						
Was the methodology chosen appropriate?	Yes	No									
Number of documents	108	0									
What is the main method employed?	Qualitative	Quantitative	Document analysis	Case study	Questionnaire	Geo-coding/ GIS	Part of larger study	Modelling	None (i.e. theory or unclear)		
Number of documents	30	11	46	21	4	1	3	6	21		
Was the data analysis sufficiently rigorous?	Yes	No	N/A								
Number of documents	105	0	3								
Is there a clear statement of findings?	Yes	No	N/A								
Number of documents	105	0	3								

Appendix 3: ‘Pop-up’ presentations of community action case examples

Ten workshop participants presented case examples of local projects and initiatives that aim to increase community resilience to climate driven risks. The following table lists the presenters, their affiliation, and the case example of community climate change resilience projects and initiatives that each presented.

Table 10: ‘Pop-up’ presentations of community action case examples from the workshop

Presenter	Affiliation	Case example presented
Roberta Antonaci	The Conservation Volunteers (TCV)	TCV’s Green Impacts project: various locations UK-wide Through this project, TCV has developed a resilience framework and assessment tool to analyse the impact of volunteering on building community resilience, and to identify the elements (under four categories: Activities, Organisation, Connections, and Skills and Knowledge) that lead to rapid responses by communities to a shock.
John Bannister	Guildford Environmental Forum, Transition Guildford	Wey Valley Solar Schools project: Surrey (since 2011) A group associated with Guildford Environmental Forum, established after the 2011 prospectus attracted £650,000 from investors in the community. Six schools have been provided with solar photovoltaic panels, a total of 260kw, and money comes from the government’s feed-in tariff, guaranteed for 25 years. Any profit over 6% goes to the school and students are involved in deciding how this is to be spent.
Peter Bulmer	West Cheshire and Chester County Council	Snow Angels project: West Cheshire (since 2012) Funding received from Defra in 2012 to develop work on community resilience in West Cheshire; the Snow Angels initiative was established, whereby volunteers offer practical support to older people during extreme winter weather. The concept is now being rolled out across the county. A video has been created to share knowledge and promote Snow Angels in other communities.
Alexia Coke	Independent	Transition Lewes: East Sussex (since 2007) Chosen as a good example of what the Transition Town movement is doing. Transition Lewes was one of the first groups to set up a community energy company (OVESCo). OVESCo had a contract with Lewes District Council to help low-income households install solar thermal panels, wood-burning stoves, ground-source heat pumps, biomass boilers and photovoltaic panels. An Industrial and Provident Society has been set up so that the community can invest in renewable power generation projects. Holds a successful annual open eco-house event, which shows how to retrofit homes with climate change adaptation technologies. Also set up SNUG social enterprise to promote draughtproofing, etc. (with Transition Brixton) and Lewes weekly food market, for trading and promoting local food.
Jayne Cox	Brook Lyndhurst	Cynefin, Welsh Government programme: nine locations across Wales (2013–16) The programme is managed by Severn Wye energy agency and is being evaluated by Brook Lyndhurst. It is a place-based change programme exploring new ways for government to work with communities to improve local environments and livelihoods in parallel. It is understood as a way of working, and there are no targets. Nine Place Coordinators are funded to devise their own programmes in local communities across Wales. Nine months into the programme there are 50 work streams. Case studies in Rhonda (flood resilience network) and Llanelli.

Presenter	Affiliation	Case example presented
Nicola Hillary	Transition Network	<p>Transition Network: Transition Totnes, Devon, and Jamaica Plain New Economy Transition, Boston, USA</p> <p>400 registered Transition groups in the UK, and internationally there are 1,200 registered Transition initiatives in 47 countries. They are all doing it differently. Transition Totnes focuses on an economy project for a low-carbon future and social well-being. A partnership of public, private and voluntary and community sector organisations evaluated the community's needs and opportunities around food, renewables, retrofitting, and the care sector, and are now taking action. A local entrepreneurs' forum raised £25,000 in 2013.</p> <p>Jamaica Plain New Economy Transition holds an annual State of the Environment forum, and work is framed around jobs and the economy, and undertaken in both English and Spanish.</p>
Tom Roberts	University of Surrey	<p>North East Kent European Marine Site: Thanet coast (since early 2000s)</p> <p>Established under the Habitats Directive. Chosen as a community project that has successfully reconnected local people to the local environment and regenerated the economy of one of the most deprived areas in the UK, through promotion of eco- and green tourism. As a result, the community has been persuaded to allow managed retreat instead of building coastal flood defences.</p>
Neil Simcock	Lancaster University	<p>RECCKN project: Newcastle-under-Lyme, Staffordshire</p> <p>A community-based, energy 'demand-reduction' project, with the broad aim to build social capital and networks in a low-income and relatively deprived community, through the use of public spaces and local events such as discussion forums (e.g. 'Energy Question Time'). Events aimed at encouraging people to share their own knowledge and experience on energy saving/efficiency (e.g. home insulation, sustainable technologies and general 'behaviour changes' in the home that can reduce energy usage and fuel bills). High engagement and knowledge; low budget.</p>
Penny Walker	Independent, Chair of Growing Communities	<p>Growing Communities: London Borough of Hackney</p> <p>A company where the emphasis is on creating an alternative food trading system, not a local food project: 80–90% of income is from trading. Operates a weekly veg box scheme, a weekly organic farmers' market and grows food in Hackney and Dagenham. Paid growers, apprentices and volunteers, but it cross-subsidises the growing. It wants to create jobs and is explicitly driven by an understanding of climate change and peak oil.</p>
Tessa Wiley	Big Lottery Fund	<p>Sustain Eden: Cumbria (first established in 2009, CLS funding since 2013)</p> <p>Project started in response to floods in Cockermouth in 2009. Worked with voluntary and community organisations to work with communities to resolve issues such as flood risk and fuel poverty, and empower communities to be resilient. New partnership now funded by BLF's Communities Living Sustainably (CLS) programme. Supported four voluntary organisations to have emergency plans; almost 700 people have attended flood awareness raising sessions; 650 people have attended events where they've shared their own expertise, stories, skills, knowledge; and delivered flood defence training.</p>

Appendix 4: Overview of community action in the UK

Table 11: Overview of community action in the UK based on the findings of the evidence review (references for Figure 5)

Area of practice	Source	Number of projects/groups cited
Community energy	Department for Energy and Climate Change (2014)	5,000
Community energy	Brook Lyndhurst and Ecometrica (2011)	8 (NB. includes 1 Transition group)
Community energy	Low Carbon Communities Network (personal communication)	300
Community energy	Test-bed communities supported by the Low Carbon Communities Challenge (LCCC) Source: Department for Energy and Climate Change (2012)	22
Community energy	Projects supported by the British Gas Green Streets programme Source: Platt <i>et al.</i> (2011)	14
Community energy	Communities supported by the BLF's Communities Living Sustainably (CLS) programme Sources: Groundwork UK (2013); CLS Climate Change Network (2014)	12
Community energy	Communities supported by Nesta's Big Green Challenge. Source: Brook Lyndhurst (2010)	10
Total community energy (generation and efficiency) projects		5,000¹⁹
Community flood risk management	Groups across England and Wales affiliated to the NFF (personal communication)	160
Community flood risk management	Groups across Scotland affiliated to the Scottish Flood Forum Source: http://www.scottishfloodforum.org/flood-groups/	61
Total community flood risk management groups		221
Community food growing	Individual projects of varying sizes supported by Local Food Source: Kirwan <i>et al.</i> (2011)	500
Community food growing	Community food enterprises supported by the Plunkett Foundation Source: Plunkett Foundation (2012)	1,600
Community food growing	Community gardens in the UK supported by the Federation of City Farms and Community Gardens (FCFCG) Source: White and Stirling (2013)	1,000
Community food growing	Communal growing spaces in London supported by the Capital Growth project Source: White and Stirling (2013)	1,962
Community food growing	Community Supported Agriculture (CSA) schemes Source: White and Stirling (2013)	80
Community food growing	Communities funded by the Climate Challenge Fund Source: Brook Lyndhurst and Ecometrica (2011)	7 (NB. includes 1 Transition group)
Total community food growing projects		5,149
Community resilience	Transition movement groups (personal communication)	400

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