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Theory and Practice of Building Community Resilience to Extreme Events

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Abstract

Community resilience represents the ability of communities to use their available resources to prepare for, respond to, endure, and recover from extreme events such as floods, economic shocks and disease outbreaks. Despite a wide range of definitions and studies into community resilience, there is a lack of clarity about what community, practice and policy stakeholders understand it to represent, and how communities can practically develop such resilience.

In this article, we present findings from two workshops with a range of stakeholders across communities, policy, academia and the statutory sector to gain an understanding of the current state of knowledge about community resilience to extreme events in the UK, including examples of current practice and how to collaborate better.

From our workshops seven key themes about what makes communities resilient were identified: social ties and connections; experience and shared memory; leadership, engagement and shared responsibility; mind-set, collective thinking, openness to adapt and cultural change; integration, inclusivity, equity and diversity; communications, social support and co-ordination; and training and exercises and identifying local needs.

How we develop resilient communities is by no means straightforward; resilience is not an outcome, rather a process (or perhaps a state of becoming?). However, this study has combined the evidence base on community resilience with qualitative inputs from a range of community, policy and academic stakeholders to provide a novel perspective on what community resilience is and how it can be developed.

Background

During times of uncertainty, the concept of community resilience offers promise in preparing individuals and communities for challenges, both expected and unexpected, while providing the foundations for developing more radical changes to improve people's lives. Community resilience promotes self-reliance and moves risk management into the hands of communities, shifting the focus of the state's responsibility and accountability in protecting and supporting their communities (Chandler, 2013, 2014). Despite a wide range of definitions and large volumes of research (Patel et al., 2017), we still know relatively little about what community, practice and policy stakeholders deem to be the key features of resilient communities, and how these features can change the narrative around resilience as a coping mechanism, often discussed in isolation from the fundamental causes of inequality, deprivation and vulnerability (Belford et al., 2017; Kapilashrami et al., 2015). Therefore, there is a need to identify both the key themes that support community resilience and those that limit community resilience, and to then transfer these findings to communities, policy-makers, practitioners and researchers.

To gain an understanding of the current state of knowledge about community resilience to extreme events and examples of current practice, two workshops were held on 19th February and 15th April 2019 at the University of Stirling, Scotland. These workshops were organised by the authors and funded by the National Centre for Resilience (NCR), University of Glasgow, Scotland. Fifty-seven and fifty-one people attended workshops one and two respectively, with eighty-three people in total attending (some attended both).

This article has three parts. First, a background section on definitions and evidence for community resilience to extreme events, followed by the workshop proceedings and finally, an outline of the conclusions and the recommendations from the workshops are presented.

Definitions

Extreme events

The majority of academic literature on 'extreme events' focuses on weather or climatic events, and/or 'natural' disasters, such as storms, floods and earthquakes, which are predominantly rare, unexpected and severe in their effects on people and ecosystems. However, although extreme climatic events are becoming more common, (European Academies' Science Advisory Council, 2018) this definition is somewhat limited in acknowledging the other types of events or circumstances that may befall communities. For example, the term can also be used to refer to disease outbreaks, social unrest, or events leading to a serious economic downturn (Wilson, 2015).

Community

While many definitions of community often focus purely on geographical location, an increasingly interconnected world gives rise to a number of alternative understandings of the term. Cinderby et al. (2014) point out that communities are increasingly virtual and physically dispersed, often consisting of a 'social network' that extends beyond a given geographical area (Rowson et al., 2010). The term community has also been widely used to refer to those connected by similar interests and affiliations across multiple areas. For

example, ethnic groups within the UK are often referred to as 'communities', regardless of whether or not they live in the same immediate locale (Blakey et al., 2006).

In relation to community resilience, Ntontis et al. (2019) identify three types of communities, other than those pertaining purely to geographical location:

- **Communities of interest**: groups within a geographical area, or across multiple areas, with similar affiliations.
- **Communities of circumstance**: communities based on people's shared experience of a common adverse incident.
- **Communities of supporters**: communities based on groups of volunteers within organisations.

Ntontis et al (2019) note that geographical communities tend to be the main targets of community resilience initiatives, with no specific guidelines given to the other types of communities listed above. They argue this lack of guidelines amounts to a considerable shortcoming, since the emergence of communities of 'interest', 'circumstance' and 'supporters' are common in the aftermath of extreme events.

Resilience

A common definition of resilience is the capability of individuals or systems (such as families, groups and communities) to cope successfully in the face of significant adversity and risk (Cinderby et al., 2014; Lyons et al., 1998; Magis, 2007). Southwick et al. (2014) also point to *adversity* as a key theme across definitions – again, referring to the ability of both

individuals and/or communities to remain positively functioning following adverse events. Resilience operates at different levels, including the micro, meso and macro. However, Ryan et al. (2018) note "there is no empirical evidence to suggest that individual resilience alone predicts community resilience and in turn national resilience". Community resilience, then, cannot simply refer to a collection of resilient individuals, but instead encompasses a more complex set of relations cross-cutting these different levels.

Olsson et al. (2015) offer a cautionary note regarding the use of the term 'resilience', which they contend is a term more associated with the natural sciences – for example, to refer to the capacity of ecosystems to respond to climate change. When used in the social sciences, key ideas such as agency, knowledge and power, are often not taken into account. Another criticism of the growing use of resilience is a narrative that focuses on individuals being responsible for 'looking after' themselves in the face of challenging events, with the underlying causes of these events being ignored, and responsibility for dealing with these causes removed from governments, businesses etc. (Tanner et al., 2017).

Community resilience

Twigger-Ross et al. (2011) define community resilience as "communities working with local resources alongside local expertise to help themselves and others to prepare and respond to, and to recover from emergencies, in ways that sustain an acceptable level of community functioning". Patel et al. (2017) investigated definitions of 'community resilience' in eighty relevant research papers, and found no evidence of a common, agreed definition. They state that community resilience, much like the individual words, is used and understood

differently in different areas of research. Wilding (2011) found a similar lack of consensus on the definition of community resilience, but argues this could be a good thing, since it gives local people the opportunity to decide what it means in their particular context. Uscher-Pines et al. (2013) also state that discussions around the definition of community resilience, while important, carry the potential to distract from the task at hand – to better prepare communities to respond to and recover from extreme events.

Building blocks of community resilience

In-keeping with Usher-Pines, academic literature has recently moved away from developing a one-size-fits-all definition of community resilience, to instead aiming to identify the common elements that *make* a community resilient (Kirkpatrick, 2019). Patel et al. (2017) identified nine core elements of community resilience: local knowledge; community networks and relationships; communication; health; governance and leadership; resources; economic investment; preparedness; and mental outlook. Wilding (2011) meanwhile developed a framework that proposes four key characteristics (or dimensions) of communities that are becoming more resilient. These include healthy and engaged people; an inclusive culture creating a positive sense of place; a localising economy; and strong links to other places and communities.

Other frameworks used to identify aspects of community resilience include the USAID resilience framework, as discussed by Haggard et al. (2019). A resilient community,

according to this framework, is one that can achieve at least the following four outcomes in the face of ongoing 'shocks and stressors': adequate nutrition, food security, economic security and ecological sustainability (see also Frankenberger et al., 2013). Cafer et al. (2019), however point to limitations of this framework, namely that a focus on these four outcomes "ignores other important system-level capacities". They instead suggest a formula that takes into account the number of systems addressing resilience in a given community, the number of assets available to these systems, and the number of hazards for which community systems have prepared.

Social capital

Researchers have also drawn upon existing social theories to try to determine the features that make 'resilient communities'. One theory commonly used is social capital. This idea was originally developed by Bourdieu,(1986, 1980) and with regards to community, enhanced by Putnam (2001) in a study of the decline of community in the USA. Social capital includes the following (Poortinga, 2012):

- **Bonding capital**: close ties between people going through similar situations – e.g. family, close friends.
- **Bridging capital**: looser ties to similar people – e.g. online.
- **Linking capital**: ability of groups to access resources from beyond their immediate community.

Aldrich (2012) argues that after an extreme event, high levels of social capital are key to a community's recovery – more important than factors such as the community's socioeconomic status, or amount of aid received.

Beyond Social Capital

Manzi et al. (2010) expands the focus on 'capitals', pointing to five capitals that can have relevance to community resilience and sustainability, with healthy and resilient neighbourhoods often having a balance of all these forms of capital. These are: **human capital** (e.g. skills and education); **social capital** (see above); **built capital** (e.g. access to amenities); **natural capital** (e.g. access to green space); and **economic capital** (e.g. income).

Ntontis et al (2019) highlight that social capital is often the only measure used when studying community resilience, and is widely used in UK policy documents on community resilience, despite the fact that using it alone misses many important aspects. A key study positing how best to measure community resilience highlights social capital as only one of four elements in community resilience, combined with economic development, community competence, and information and communication (Norris et al., 2008).

Process or outcome?

Regardless of the definitions or frameworks applied, there is a growing belief that community resilience ought to be seen as a process, rather than an outcome (Norris et al., 2008; Ntontis et al., 2019). Community resilience is a continuous process of adaptation, and development/maintenance of the key features would mean greater resilience in the face of

an extreme event. However, our understanding of community resilience over time is limited by a small number of studies that collect long-term, longitudinal data (Gibbs et al., 2013).

Workshop

Methods

The workshops utilised the snowball sampling technique by recruiting identified academics, policy-makers, practitioners/first responders and community groups, combined with an open invite to potentially interested parties made through existing networks of the organising team. At workshop 1 a total of 57 people attended. This included 30 academics (including 4 PhD students and 1 undergraduate student), 7 policy-makers from across local and national government and NGOs, 6 practitioners (British Red Cross, Scottish Environment Protection Agency and Scottish Fire and Rescue) and 11 community group representative. A further three attendees worked in the private sector. At workshop 2 a total of 51 people attended. This included 24 academics (including three PhD students), 10 policy-makers, 2 practitioners (British Red Cross), 12 community group representatives and 3 from the private sector. All participants were involved in some capacity with either community resilience building and/or responding to extreme events such as flooding, fires, terrorist events or mass protest events.

At each workshop (facilitated by a neutral knowledge broker), participants were instructed that comments and discussion outcomes would be recorded and used for publications after the event, and these would be anonymous. We used an opt-out ethical consent process

with ethical approval provided by the University of Stirling General University Ethics Panel (Ref: GUEP585). Facilitator summary notes and participant post-it notes and flip-charts were retained and recoded to identify common themes and topics from the discussions. The analysis involved reviewing initial themes for any overlaps or refinements needed. These were then scrutinised, refined and discussed by the research team until agreement was reached on the final themes.

Results

The first workshop introduced the main concepts to be discussed – extreme events, community and resilience. Prior to the workshop, a briefing paper was sent to the participants, introducing the research team, the idea of the project and a selection of concepts for participants to reflect on, similar to the definitions above.

Extreme Events. After initial introductions and ice breakers, the group was asked to discuss and create a list of important extreme events (Table 1), including, but not limited to, extreme weather-related events, accidents, terror attacks, shortages of power/heat/water, political events and loss of jobs (through the closure of a major employer).

Table 1 A list of extreme event examples (in no particular order)

Major Fires	Critical national infrastructure changes e.g. building/opening of new road network	Terror attack
Major Accidents	Snowstorms	Zoonotic disease

Suicides in Public places	Depopulation in small communities/islands	Pandemics
Flooding	Cyber threats	Brexit
Landslides	Sport mega-events	Water shortages
Scottish Independence Movement	Changes to welfare systems e.g. sanctions	Major life events (births, bereavements, disease diagnosis)
Closure of large employers	National power outages	Localised power outages
Race-related violence		

This range of extreme events fit with previous suggestions around 'disturbances' that can impact on community resilience, including natural and anthropogenic disturbances (Wilson, 2015).

Small groups (5-8 people) were then invited to discuss the list and choose the most important extreme events Scotland currently faces. The top two responses were 'major weather-related events' and 'political events'. Less support was given for pandemics (noting that the workshop was pre COVID-19), collapses in biodiversity, mega events and economic events. It is important to note that although these were identified as extreme events Scotland is facing, they were not used to limit further discussions. Rather, participants were instructed to keep these 'top two' extreme events in mind when discussing community resilience later in the day, but we wanted them to feel they could continue to make overarching conversations more local and relevant, allowing them to reflect on an extreme event they may personally face.

What makes a community resilient? Discussions then moved onto what makes a community resilient. The group was asked to reflect on discussions up to that point, their knowledge of the research evidence and of personal experiences with extreme events, in order to construct a list of themes featuring within resilient communities. Seven main themes were eventually identified: social ties and connections; experience and shared memory; leadership, engagement and shared responsibility; mind-set, collective thinking, openness to adapt and cultural change; integration, inclusivity, equity and diversity; communications, social support and co-ordination; and training and exercises and identifying local needs. Participants were asked to move to a table that corresponded to each theme and have a focused discussion around three points: what we know, what we do not know and examples of best practice. Over two rounds of discussions, where participants could stay at their table or move to another topic, those around '***experience and shared memory***' (approximately 30% of participants involved) and '***leadership, engagement and shared responsibility***' (16%) were the most popular.

For '***social ties and wider connections***', importance was placed on the formation of social ties based on social capital, interests, cultures, locality (home, school/education, employment), sport, family, friends, use of space (community gardens, foodbanks, other shared experiences) and language. These ties and connections can be informal (gossip, pub chat etc.) or formal (discussions with local authorities), but at their root is getting to know people and identifying ways of creating a collective consciousness (Walker, 2018). Best practice was seen to involve actively encouraging an open space for voices from all

stakeholders and facilitating communication across different groups/spaces/genres/communities.

In the discussions around '***experience and shared memory***', participants identified that we already have research evidence and local knowledge of the importance of shared identities of value and power (Allaby et al., 2008; Ntontis et al., 2018; Wilson, 2015), and how people often have attachments to places in particular (Norris et al., 2008; "Sense of Place," 2000). Thus making communal spaces and symbols of community of particular importance. However, we know less about the differences between urban and rural resilience, the dynamics of establishing a shared narrative and the temporality of resilience (and the need to research this over the long-term). Best practice was deemed to involve clear future plans for communities, with creation and celebration of shared identities. It was also established there is a need to learn from failure, and to communicate this for future generations.

The discussion around '***leadership, engagement and shared responsibility***' identified leadership as a contested term and there are difficulties in how we define leaders and leadership (Faulkner et al., 2018), which could lead to power imbalances e.g. between community members and those in the statutory sector (Matin et al., 2018; Mayo & Taylor, 2001). Participants noted that leadership should be recognised and promoted at all levels, but with a particular focus on promoting collaboration and community-led response. The statutory sector can lead in promoting such actions before, during and after extreme events. Communities can benefit from resources provided by the statutory sector (e.g. first aid, training, supplies, damage repairs, personnel, experience, leadership), but it is essential the

community leads in identifying its needs and how different partners can help in addressing these.

The discussion regarding '***mind-set, collective thinking, openness to adapt and cultural change***' focused on the importance of encouraging opportunities for everyone to speak and be listened to. An openness to adapt (e.g. incorporating new technologies), and a willingness to change the existing culture of a community to better respond, are important. However, there are evidence-gaps around how new technologies and automation may limit or damage resilience (through isolation and minimising our ability to respond). We also know little about what the catalysts are for collective thinking and mind-sets, or what resources/support are required.

'***Integration, inclusivity, equity and diversity***' focused on the range and diversity of people and definitions classed as a community. What we understand as community has largely focused on communities of geography, but this has shifted to much wider definitions since the growth of the internet and social media (Ntontis et al., 2019). This was seen as having positives (bringing new and more diverse communities together) and negatives (potential for losing cultural heritage) – we also need to be aware of the potential for social class and generational differences in how people define their communities (Manstead, 2018). Resilient communities should have value and space for differences and each member's own identity. They should also allow for proactive forms of participation and developing change.

'***Communications, social support and co-ordination***' covered the importance of more cooperation (typically from local communities) in giving and sharing information (typically from statutory organisations). While many organisations have moved to online communication (especially during extreme events), there can be a level of distrust and disconnect from such means (Eriksson, 2018; Tagliacozzo & Magni, 2016). Communities need to be trusted to form themselves, but may need co-ordination from more experienced or trained individuals, developed through two-way communication that identifies and addresses the physical and emotional support needs of individuals and communities.

There was some overlap between the above theme and '***training and exercises and identifying local needs***'. This focused more on practical steps taken around more formal training. There is currently a risk we do not routinely identify who has local knowledge and what local needs are (Généreux et al., 2019). Examples from past events are one way to help develop suitable training that allows communities and practitioners to identify and act on the strengths and weaknesses of each community. During the discussions gaps were identified around bench-marking, reimagining standard approaches that can be specific to a community, and a lack of resources/access to existing resources to support all communities.

Case Studies. To help identify examples of what makes communities resilient, our workshops included invited case studies from a range of community projects across Scotland:

- Community-led care initiative for residents in a rural part of Scotland
- Island-based local resilience team

- Community-led community development organisation
- Community development trust
- UK non-profit that connects communities and helps organise/facilitate community events

Using a World Café design, workshop participants were able to discuss what these case study groups have found to work well and what could be done differently. The results overlapped with key themes, identified above, around what makes communities resilient ('theoretically'). Matching the '**social ties and connections**' theme, our case studies saw the importance of building on and embedding existing community links and knowledge as the foundation for a sustainable community group. Communities should be encouraged to help one another, sharing experiences and actively contributing to collaborative projects. However, it is important to avoid isolation from the opportunities afforded by private and public sector contributions/commitments. The responsibility to connect falls on all parties to actively engage with one another and identify areas of mutual interest.

Linked to '**experience and shared memory**', our groups felt it was important for communities to use neutral spaces where possible (rather than spaces deemed 'usable' by other organisations). For communities to last, they felt it was important to have organic growth from within, with development of the community not dictated by others, and freedom for new people to join and others to leave according to the focus. This can be tricky – some people/groups may need a common agenda to bring and keep them together while others need to be agenda-free and driven by emerging needs. There is a risk not all ideas or actions will work, but learning from failures and mistakes is just as valuable as success. To

maximise learning communities should share experiences with others and build up a knowledge-base to inform long-term planning.

Overlapping with '**leadership, engagement and shared responsibility**', our groups found partnership working with external organisations/bodies important for building resilience and sustainability, although it is key to agree clear definitions of roles and activities early on and for these organisations to support, rather than lead, the community activities. Communities can also benefit from working with key community figures in formal and informal ways, especially those not part of group meetings, events etc. Projects need to be co-produced between communities and more 'formal' partners, such as local government, with focus on the community leading where and when it is able. Communication in conjunction with trusted local sources, to leverage credibility, is one practical way of building these partnerships. All parties need to continually review individual and collective roles as communities develop their confidence and skillsets.

Acknowledging conflict is part of the process of building a resilient community links to our '**mind-set, collective thinking, openness to adapt and cultural change**' theme. Although potentially uncomfortable, emerging from disagreements and competing viewpoints can bring communities together in a stronger way. Using one 'small' idea/change with a practical element (e.g. organising a local training event), especially early on, has consistently been found to be a successful approach to building a sense of community.

In '**integration, inclusivity, equity and diversity**', previous discussants felt that while the traditional focus was on communities of geography, this was shifting somewhat, although it remained a key type of community. In our case studies, groups linked to geographically isolated communities (susceptible to isolating weather events), such island or more rural areas, felt limited external influences meant these types of communities are more inclined to work together. This is seen as both positive and negative for building community resilience. It also ties into the idea of local need being a key element of bringing people together through a common cause that affects them (and perhaps not others in their non-geographical communities/networks).

Linked to '**communications, social support and co-ordination**', our groups identified that specific resilience plans should be included in any wider community action plans. It makes the process of building resilience a more positive exercise and keeps it 'live' as a current action plan. Finally, linked to '**training and exercises and identifying local needs**', identifying needs and challenges of individual communities is key. As noted above for the 'integration' theme, each community is different and while there are key concepts, lessons and practical steps that can be used to build resilience, these should always be tailored to the community in question. Regular fact finding and mapping of resources are practical steps communities and external organisations can take to help identify these needs and existing activities. Some practical considerations suggested as essential were good baseline data, with both short- and long-term follow-up to evaluate change and success. If there are specific projects being developed (e.g. receiving funding to build a flood defence), the evaluation plan should be in place before the project starts. This may involve utilising

outside partners, such as academics with experience of evaluation. Like all community development work, consistent funding is essential to the success of building resilient communities. Participants felt funding was often limited, for short spells of time, and project plans had to change regularly to win further funding.

Linking communities with policy. The final group workshop activity discussed and identified how communities can improve and utilise their resilience through working more closely with policy-makers. Small group discussions focussed on four questions: What is important? What is missing? What practical steps are needed? Who needs to be involved?

What is important for improving links between communities and policy? Sufficient long-term resources (money, time and people) would help communities plan ahead and feel they are supported by local and national governments. Two-way communication, listening to what both communities and policy/statutory bodies need, is vital, allowing both groups to build trust. The groups also felt it is essential for policy-makers to listen, value and learn from community knowledge and past experience. Finally, understanding and communicating 'why', as well as 'what', change is needed is essential for communities and policy-makers to create better working collaborations.

What is missing for improving links between communities and policy? A lack of long-term planning and support mechanisms (people, places and finance) was consistently raised across discussions, meaning groups struggle to meet their potential and can easily disband.

The group also felt there was a lack of strategies for prevention from a range of threats; rather policy-makers (and communities too) focus on specific threats, making it difficult to adapt to unexpected events. While there were positive collaborative experiences, community representatives felt real local democracy was often missing or, where present, a token gesture. This was confounded by a top-down approach to decision-making from the policy side, with a lack of value placed on co-production of solutions and poor communication strategies between groups.

What practical steps are needed for improving links between communities and policy?

Participants agreed better communication strategies are needed, with no jargon, and where communities have a respected voice. More funding, especially over the longer-term would also be welcome. It is important for all those involved to recognise the possible antagonistic relationship between communities and authorities (e.g. police), and to allow open and frank discussions about concerns, before trying to find common ground. Other practical steps include providing access to support services e.g. crèches to enable volunteering, the mapping of what is happening in terms of community and responsive services, and local emergency planning officer/response teams to coordinate information-sharing with communities pre-event, and help with response efforts. In addition, policy templates/examples from previous community projects could be useful, but should be regularly updated and refined to match communities' needs; the presence of community resilience groups and emergency response teams at community events, so local people know who to contact with questions/concerns; and local emergency planning officers who are in touch with local issues/concerns.

Who needs to be involved for improving links between communities and policy? It was suggested a range of individuals/groups outside of the defined 'community' or 'policy people' can help facilitate effective links. This would include businesses and 'trusted' organisations invested in the area, people not engaged with community groups or organisations on a regular basis, those most impacted by extreme events, anchor organisations, first responders, and younger people who may not typically be involved in such community building.

Discussion

Strengths and Weaknesses

There were a number of strengths contained within this project. To begin with there were many unique interactions inspired by a combination of people, time and discussion topics. This was often the first time people had been in the same room as those from either a different field or type of work. Having two full-day workshops dedicated to holding discussions was important in order to allow for the depth of conversation and variety of topics. This leads on to another key strength: due to the diversity of attendees and the structured, professional facilitation, all voices and perspectives were heard both as individuals and as collective sub groups. Finally, there was strength in having several methods for data collection, analysis and dissemination. This ensured the inclusion of a variety of different perspectives and voices for the gathering of a more holistic view of community resilience, and for information to be circulated to a variety of audiences for maximum impact.

Like any project there were also limitations to be considered. First there is the matter of the sample of participants primarily being from Scotland, with a few participants from England. That being said, it is important to know about local and national strategies, and aspects of community resilience to extreme events, in order to be relevant to one's local context. Scotland has a long history of community development, especially as a formal profession, since the mid-1970s (McConnell, 2002). Participants came from a range of backgrounds and there was experience building community resilience to extreme events such as floods, fires and terrorist attacks, as well as a broader interest/expertise in building resilience to withstand a range of expected and unexpected events. The workshops took place prior to the COVID-19 pandemic and while this is currently the most notable extreme event affecting this region, Scotland regularly experiences major flooding and snowstorms as well as more recently also experiencing more notable political debate and protest linked to independence and Brexit. Scotland is also home to significant socioeconomic deprivation and inequalities (Joseph Rowntree Foundation, 2020), representing a key experiential background for much of the work taking place related to community resilience and extreme events. Due to the timing and small scale nature of the project, there was a limited capacity of only 50 participants per workshop. However, smaller numbers allowed for more in-depth discussions between participants and stronger networking opportunities. Leading on from that, participants were limited to the authors' connections and networks, and it is likely there were a number of people missing who would have provided important contributions. The method of snowball sampling allowed for a cheaper, quicker and more efficient recruitment strategy. However, with such a sampling technique there are risks of non-random selections, meaning we cannot be sure if the voices in the room are representative of the wider population (Johnson, 2005). This was off-set somewhat by the relatively large

sample we were able to recruit and the diverse range of participants. We actively started the snowball method by targeting networks and individuals we felt were key voices and, without being able to disclose participant names, are confident we reached a suitable balance of representative participants for the desired study aims. Finally, the concepts of 'community', 'resilience' and 'extreme events' are all quite broad on their own, let alone when combined. As such, it is possible people's understanding of these concepts was wide, and not all discussion points will be relevant to all stakeholders.

Conclusions

Extreme events are becoming a more common occurrence, whether related to climate change, epidemics, political acts or individual circumstances. This project was completed prior to the global COVID-19 pandemic, but the findings remain relevant, possibly more so given this unique global extreme event. As community members, we all have a vested interest in how we support our communities in order to respond and react to the inevitable changes that come with the current political and environmental contexts. Building resilient communities is by no means easy. This study has combined the evidence base on community resilience with qualitative inputs from a range of community, policy and academic stakeholders, to provide a novel perspective on community resilience and how it might be developed. The themes identified should be applicable across many communities, however, each must be afforded the opportunity (with sufficient support) to identify its own requirements, and allowed time to build the resilient community it needs and wants. In comparison to previous frameworks and discussions, there is the strongest overlap with nine core elements put forward by Patel et al. (2017), which include similar features such as

effective communication, networks and relationships, and leadership. However, this study has considered community resilience in response to a broader suite of extreme events, which may have a less 'visible' or 'physical' impact (e.g. flood damage) but are by no means less impactful psychologically on individuals and communities.

Recommendations

We have four key recommendations for those interested in working with communities to support community resilience, especially with regards to extreme events such as climate change and disease outbreaks like COVID-19. Overall, for effective community resilience to take place, formal and informal development and processes need to occur. Informal development can include things such as ensuring local community events are supported – these could also include elements of activism and promote a sense of ownership. Formal development requires clear roles, plans and communication strategies are in place, as well as training and equipment. It was clear from the interviews that commitment from the community and the local authority to work together towards a common goal is crucial. Our four recommendations are:

1. Ensure there is physical space for community groups to share their experiences, memories and knowledge. There is need for the creation, or maintenance, of sustainable community centres in which to hold meetings, events and provide space where the community can develop its identity. These spaces do not have to be built from the ground up; they can be repurposed buildings or be created by partnering with local businesses interested in utilising their existing space in creative ways.

These spaces can be subsidised by the local authority, but the community needs to have autonomy and ownership as to how the location is used.

2. Continue to utilise, support and promote local community knowledge. Each community has different needs, resources and experiences and we need to encourage and nurture relationships between researchers, policy makers and communities in order to identify these and look at how they can be best utilised to build resilient communities. Helping communities identify their shared identity and collective narratives is key to fostering long-term, sustainable resilience. This can be facilitated through the co-production of knowledge exchange workshops, or citizen hearings, with local community members, policy makers (such as demonstrated in this project) and co-production of research, which includes community and policy stakeholders from the start. It is essential to hear the lived-experience of community members, and for researchers and policy makers to value this kind of evidence and incorporate it into research and policy.

3. All community projects must have an element of co-production in them from the beginning, which includes local community members, policy makers and other key individuals or organisations identified as important to the community. For example, discussions held in workshop two were a rich example of the importance of knowledge exchange and co-production between groups. The success of this project and the case studies we heard from would not have been possible without this diversity and engagement of community members from the beginning; working in

collaboration with a variety of stakeholders and partners from local and/or national government and researchers.

4. Better communication and partnership. If there are local and regional resilience partnerships in place, ensure local communities are aware of who is in them, what their role is and how to contact them. Partnerships should also actively engage in supporting the development of social capital and community resilience before an extreme event takes place. There is a need for improved working, communication and collaboration between formal resilience groups linked to local authorities and national government, with those more informal community networks, which may often develop organically, particularly after extreme events. For example, this links to Recommendation One – ensure there is continued and sustainable availability of physical space for communities to use formally and informally.

Summary

This article provides a background to community resilience to extreme events, followed by workshop proceedings from a range of academic, policy, practice and community stakeholders. We provide novel evidence of the key components of resilient communities in the face of a wide range of extreme events, which can all practically be implemented in various communities given the right investment, support and time.

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