CHAPTER 5

Putting Climate Resilience in Its Place: Developing Spatially Literate Climate Adaptation Initiatives

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Abstract

- Understanding the socioeconomic, cultural, historical and political nuances of a place is essential for realising effective local decision-making for climate action.

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- People are central to understanding place-based risk and resilience, with consideration of inequality and vulnerability required for effective place-based climate adaptation.
- Temporality is important. Place is not fixed, but changes over time, together with the community that inhabits it.
- Discussing and sharing community knowledge increases the likelihood of successful creation and implementation of climate adaptation practices.
- A sense of place can be deployed to build connections between people, across policy and between scales.

Keywords Adaptation · Place · Resilience · Local · City · Regional

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1 Introduction

Climate change has profound implications for societies across the world. The impacts of climate change are most acutely experienced at local scales, in the buildings, streets, neighbourhoods, towns and cities where people live and work. It is at this most granular spatial scale that climate change becomes a lived reality.

Unlike climate mitigation, often framed as a global collective effort, adaptive pathways and interventions are dynamic social processes [1], realised at local scales, that require tailoring to specific contexts of people(s) and place(s) in all their complex and intricate assemblages. But implementation challenges abound [2]; successful adaptation requires careful coordination across a myriad of local actors and organisations, often with divergent interests and agendas. Moreover, investments for adaptation can have multiple dividends [3], addressing other pressing local issues—for example by improving our environment (e.g. parks, treescapes and waterways), or providing efficient, reliable, green transportation.

The concept of 'place' is subject to debate and interpretation across disciplines [4]. A key point is how it differs from words like location or resolution, which are common concepts in climate research. Place combines a physical understanding of a location with the social, cultural, sensual and psychological values that people hold. For example, a detached scientific interpretation may suggest that a village has to be abandoned due to its location. However, for the people who live, or have lived or worked in that place, complete abandonment may seem inconceivable as this is where their children grew up, where their ancestors are buried and it holds their memories. The sense of distress and grief associated with environmental change, and with the prospect of relocation is termed 'solastalgia' [5]. Moreover, 'place' is never settled. It is, rather, in a perennial process of becoming [6], continually emergent, negotiated, contested and renegotiated.

This chapter coalesces learning from projects that considered how climate adaptation and resilience have resonated with 'place' across its multifaceted geographies and socioeconomic, cultural and political characteristics. It outlines practical ways of accommodating climate resilience within a place, from working with communities to understand how they use their buildings and what place means to them, to what information

helps decision-makers at municipal and neighbourhood scales take climate action.

The chapter emerged from an initial discussion of the importance of place-based climate resilience projects, followed by a workshop session. Case studies from across the UK Climate Resilience Programme (UKCR) are briefly described, revealing how the sense of place changes at different scales but can also serve as a vital connection between us.

Given the complexity and subjectivity of interpretations of the concept, contributors have been given latitude to identify how place, a sense of place, and place attachment emerged as critical themes through their work.

2 Local Places

2.1 ClimaCare

The project 'ClimaCare' quantifies climate related heat risks in care settings nationwide and enhances our understanding of human behaviour, building performance, organisational capacity and governance to enable the UK's care provision to develop equitable adaptation pathways to rising heat stress. For the first time in the UK, ClimaCare collected temperature and humidity data in around 40 care settings, to assess the recurring risk of summertime overheating.

Results from London care homes suggest that overheating is prevalent and prolonged, especially at night; the inability to cool down overnight can lead to increased mortality. Since the severity of overheating was lower in older buildings, building construction age can be a key factor for overheating risk [7].

In analysing differences between bedroom spaces and lounge areas, ClimaCare developed understanding at the sub-building scale, plus insights into how building design and behaviour have changed over time (i.e. a focus on winter warmth in recent years, with little ventilation). The work of ClimaCare, therefore, highlights the usefulness in understanding how buildings—vital constituent elements of place—are constructed, operated and managed in future climate adaptation planning.

2.2 *CLandage*

The project 'CLandage' uses a historical lens to learn about resilience. By learning how rural communities have adapted and responded to challenges (including extreme weather) in the past, communities are reminded that places evolve over time [8].

One case study was a Grade II listed stone bridge at Pooley Bridge (Cumbria). Built in 1764, the bridge was lost during severe floods in December 2015 and replaced by the UK's first stainless steel bridge. The name 'Pooley Bridge' reflects a longer history; 'Bridge' was added around 1800. Prior to this, the site was known as 'Pooley' or 'Pool How' (the 'pool beside the hill') and was situated at the foot of an ancient Iron Age hill fort. The site is a strategically important bridging/fording place within the wider landscape, with each new bridge designed to accommodate greater flows and protect the community. The bridge's purpose and design have changed through time as the needs of the people in that place changed. The newest steel bridge was designed to consider the wider policy and regional needs of the new UNESCO and Site of Special Scientific Interest (SSSI) designations, as well as respecting local history and environment, and providing functional infrastructure within a working landscape. As well as exhibitions and workshops, learning from this project has been encapsulated in a toolkit for identifying, assessing and characterising river heritage in collaboration with local communities, which will help support decision-making.

3 Neighbourhoods

3.1 *MAGIC*

The 'MAGIC' project (https://www.communityactionforwater.org) explored how to sensitively engage local people in helping to hold rainwater back in their neighbourhoods, to both reduce flood risk at times of heavy rain and to enhance understanding of more natural and sustainable drainage. It revealed that engaging the public could augment the extent to which excess water can be stored in the landscape through domestic 'rainwater management systems' (such as water butts or rain gardens) [9]. Additionally, these systems provide an understandable small-scale 'model' of sustainable drainage systems, which were simultaneously being developed in the locality.

As climate change magnifies the risks of pollution and flooding, the need for public understanding of sustainable drainage becomes more urgent in order to enhance community buy-in when authorities propose sustainable drainage on public land, augment the public system by promoting small-scale rainwater management on private properties and increase acceptance for public funding of sustainable drainage.

Community buildings (including a church, a primary school and a general store) were taken as a focus for engagement with local people using arts-based methods, such as drawing and ideas boxes, to stimulate discussions about where rain could be directed and held back. The key question addressed was: "Where around this building can we contain the rain, while also making it a better place for you to be?". A key concern was to discuss rain without giving too much emphasis to flooding, which had locally traumatic associations. MAGIC's community partners set up the cooperative 'Susdrainable' https://www.susdrainable.coop, to both construct the MAGIC rainwater management systems and support the placement of similar systems on other domestic and commercial buildings. The legacy of the project includes the five rainwater management features in the landscape, associated signposting, and the ongoing work of Susdrainable.

3.2 Creative Climate Resilience

The 'Creative Climate Resilience' project focussed on community knowledge and creativity in an ex-industrial electoral ward in Manchester with high levels of social housing. Data on the local population show high incidence of poor health, poverty and social deprivation, low levels of voting, and conflicting development agendas.

Creative Climate Resilience explored how socially engaged arts and community-based performance methods can be used to identify barriers and solutions, articulate perspectives, and offer processes, tools and skills to initiate climate mitigation and adaptation strategies. By taking a political 'ward' boundary, the project offered insights for how local authority practices compare with the city scale. Practically, the project informed the local climate action plan through active collaboration with the local authority and other stakeholders. Innovative outputs included toolboxes, school packs, animations and performance.

Investigating perceptions, knowledge and experiences of 'local' place and neighbourhoods (i.e. distinctiveness, identities, care, activity,

networks and physical assets), provided insights around the complexity of community resilience. Artistically, exploration of folklore and storytelling transform the ways in which place and landscapes are perceived and imagined, folding nature and culture together, to capture the ways in which a place is shaped by interwoven social, psychological and topographical factors. The Creative Climate Resilience project has, importantly, participated extensively in local activities in order to understand existing models of collaboration, creative solutions and care, and to identify barriers and opportunities around resilience.

4 Cities

4.1 London Climate Action

The 'London Climate Action' project developed an understanding of how the urban subsurface (the land and built infrastructure below the surface level) could help deliver the City of London's Climate Action Strategy https://www.cityoflondon.gov.uk/services/environmental-health/climate-action/climate-action-strategy. The City of London has a particularly unique sense of place with a small population of residents but a high migrant workforce, coupled with a congested and historic built environment both above and below ground. Access to subsurface data is complex, costly, restricted and sometimes lacking entirely. Subsurface models that work well in some urban spaces are problematic in other locations.

The project recognises policy and data sources relevant to the subsurface in relation to five key climate adaptation measures: (1) sustainable drainage systems; (2) urban greening and tree planting; (3) cool spaces below ground; (4) ground source energy; and (5) prevention of damage to buried utility services. This project found challenges with reconciling data, policy and other issues in different organisations, highlighting a need for government and organisations to work together on data creation, access and model development. The project identified a 'subsurface' dimension to resilience planning, demonstrating gaps/barriers to mapping the use of these places and recommending implementation of suggested adaptation measures.

4.2 *Meeting Urban User Needs*

The project 'Meeting Urban User Needs' provided a number of UK cities with the capacity to access and interpret local climate information for decision-making.

Cities are complex systems with unique social and economic vulnerabilities, and decision-makers need to navigate climate adaptation in an equitable way. They first need to understand how climate change might impact the city as a whole, as well as the relationship between climate hazards and specific city vulnerabilities, so that at-risk areas and vulnerable groups can be prioritised for adaptation planning.

Urban City Packs were developed with a user journey approach in mind, building awareness, depth of understanding and capacity for implementing informed climate action. Services were developed with cities, and broad climate messaging and climate model output were framed at the local level.

While each city had similar requirements in terms of climate information, every city was unique in terms of capacity to interpret and use information; depending on location, different hazards (e.g. heat, flooding, drought) and vulnerabilities (e.g. infrastructure, health, population) were prioritised, resulting in bespoke products to fit user need. All cities required additional support to understand how they could use the information in their climate action. It was important to work closely with the city, to inform both the design of the city pack (an understanding of 'place') and ongoing development of the service (an understanding of use).

4.3 *Manchester Climate Ready*

The 'Manchester Climate Action' project [10] demonstrated that at a city scale, climate adaptation policy and practice must be cognisant of—and complement—municipal characteristics of place. This resonance is essential not only to assure acknowledgement by city leaders, but also to gain traction in the congested arenas of public policy and urban governance. Such an approach is vital if climate policy is to be integrated with broader economic, social and cultural policies and practices.

In Manchester—a city with a self-declared vision to be in the top flight of world-class cities by 2025 (manchester.gov.uk/info/500313/the_manchester_strategy/7177/our_vision_for_manchester_in_2025)—it was

clear that climate policy should be reconciled with its socioeconomic ambitions. By appealing to these agendas, climate resilience policy not only gains greater recognition in its own right but also has the potential to use broader policies as a vehicle for greater climate resilience.

A placement undertaken with the Manchester Climate Change Agency carefully situated climate policy within these wider contexts, with outputs including the development of a vision (https://www.manchesterclimate.com/content/2022-update) for 'progressive climate resilience' [11] and an associated series of principles that would integrate with other city-wide agendas and ambition. The project has a lasting legacy through on-going work referred to as 'Manchester Climate Ready'. [1]

5 Regions

5.1 Once Upon a Time

The 'Once Upon a Time' project explored how stories and storytelling can effectively be used in climate risk research in Northern Ireland. It considers contrasts in local climate between eastern and western counties, extending the idea of 'place' to the emergence of 'networks between places'.

Initial visual storytelling, in the form of infographics, started with a top-down, data-driven approach, producing risk-related metrics for the agricultural community through an app (https://ukcrp.shinyapps.io/AgricultureNI/). Feedback quickly highlighted the need for further detailed contextual information at a more localised scale, leading to discussion groups being organised across different regions to allow stakeholders to tell their stories. While research often translates hazard data (e.g. number of heatwaves) to impacts (e.g. livestock heat stress) across large spatial scales, local idiosyncrasies mean methods to do this may come with significant uncertainties. Working in collaboration with stakeholders to locally contextualise data can help understand the appropriate 'risk currency' [12] for a given place and help reduce uncertainties that are inevitable in a one-size-fits-all model.

Furthermore, in Northern Ireland, there is a considerable degree of east–west variability in climate impacts, in terms of forage for livestock during hot, dry summers, for example. Province-wide resilience could

[1] See Chapter 4 of: https://www.manchesterclimate.com/sites/default/files/2022%20Update%20of%20the%20Manchester%20Climate%20Change%20Framework%20%282020-25%29%20AA.pdf.

potentially be built by strengthening existing networks between places or communities in different geographic locations that may be impacted asynchronously in time.

6 Conclusions

The chapter demonstrates how, across a multitude of distinct case studies and projects, 'place' is key to the extreme weather and climate impacts we experience and can be used to frame climate adaptation and resilience in a more accessible and more efficacious way. We identify below six key principles from these projects to aid climate adaptation by practitioners and policymakers.

1. Climate action and adaptation are more likely to be effective if they acknowledge and are congruent with local senses of place. That said, despite the great importance of place-based actions, these should not be developed at the expense of addressing the wider structural issues that limit both climate action and adaptation, such as the challenge of achieving joined up policy making.
2. Place is relatable. It is where the implications of climate change become personal and tangible. Place, and a sense of place attachment, can be used to evoke the urgency and necessity of adaptation and to energise policymakers at local scales.
3. Place changes over time, as do cultural norms and the behaviours of people that inhabit a place. Set ideas of place can be restrictive for imagining futures or different ways of living. Understanding how a place has evolved and adapted across time and how this will be influenced by climate change is vital, therefore, to understand what will facilitate and inhibit adaptation.
4. Understanding local vulnerability is vital for realising adaptation, such as how buildings, neighbourhoods and wider areas are planned, constructed and function, and how each of those elements relate to each other. Decision-makers must also be attuned to inequality across and between places. Inequalities and inequity within existing decision-making around place is a major barrier for adaptation, and one that must be carefully understood and confronted.
5. Place is not just about the buildings or infrastructure; we must engage with people. Folklore and storytelling can be used to unearth community knowledge and creativity, to identify barriers, solutions

and perspectives, and offer processes, tools and skills to initiate climate action and adaptation strategies. Change happens when communities are united by a common threat or sense of purpose. Developing proposals with local people not only helps shape adaptation to meet local needs, but also enhances local understanding of the need and means to mitigate and adapt to climate change.

6. Place connects not only the people in localities but across different scales. The distinctiveness of particular places and their similarities with other locations provide useful reference points and, potentially, a locus of connectivity. Place is distinct, yet also nested in scale, relational and in connection with other locations.

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