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From National to Neighbourhood: A Scoping Review of Place-Based Building and Heat Decarbonisation Policy in Great Britain (2010–2026)

UKERC Working Paper

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May 2026

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UKERC is funded by the UK Research and Innovation under UKRI098: UK Energy Research Centre (UKERC) 2024-2029.

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Executive Summary

Cold, damp and poorly maintained homes contribute significantly to health inequalities and socio-economic deprivation across Great Britain. Buildings account for approximately 22% of UK territorial greenhouse gas emissions, yet progress in decarbonising this sector remains off track. Place-based approaches — which foreground the specific social, economic and infrastructural (amongst other) characteristics of localities in the design and delivery of retrofit and heat decarbonisation programmes — have emerged as a central feature of recent UK, Scottish and Welsh Government policy. However, persistent conceptual ambiguity and unclear governance arrangements risk undermining their effectiveness.

This scoping review examines how place-based and cognate approaches to building and heat decarbonisation have been employed in both government policy and non-governmental organisation (NGO) literature in Great Britain from 2010 to 2026. A total of 125 documents were identified through systematic and interpretive searches and analysed for their engagement with place-based design and delivery, governance arrangements, funding mechanisms, and the roles ascribed to different actors. Key lessons were synthesised to help guide the remit of the recently announced Warm Homes Agency and inform future place-based delivery of building and heat decarbonisation.

The review finds that place-based terminology — including 'area-based', 'neighbourhood', 'community-led' and 'local' — is used inconsistently and without an agreed definition across policy and practitioner documents. National policy has oscillated between centralised, spatially-agnostic delivery models and more devolved, place-sensitive approaches, with Scotland and Wales demonstrating greater continuity in area-based delivery. NGO literature offers more holistic conceptualisations of place, prioritising emphasis on lived experience, social justice and community empowerment.

Key Findings

1. Place-based thinking has evolved unevenly across governments
In England, under the Coalition Government (2010–2015), place-based thinking was emergent but lacked specific financial and regulatory delivery mechanisms. The Conservative majority period (2015–2024) saw a rollback of green policies, greater centralisation, and a shift towards market-led, spatially-agnostic approaches. The current Labour government (2024–present) has renewed emphasis on devolved, place-based delivery — but conceptual clarity and implementation detail remain underdeveloped. Scotland and Wales have demonstrated stronger and more sustained commitments to area-based delivery, though challenges around scale of governance, funding and developing legislation persist due to disconnection between central and devolved nations' approaches to building and heat decarbonisation.

Within these documents, terms such as 'place-based', 'area-based', 'neighbourhood', 'community-led' and 'local' are either used interchangeably without a clear definition, or not at all. This creates confusion about what is expected of various delivery actors across different scales and inhibits effective coordination. The recent Warm Homes Plan [1] uses at least four such terms without clearly distinguishing between them.

2. Governance arrangements are multi-scalar, but roles and responsibilities remain vague

NGO literature consistently argues that Local Authorities (LAs) should be empowered as place-shapers and delivery leaders. The emergent Warm Homes Plan supports this idea. Mayoral Combined Authorities (such as Greater Manchester and the West Midlands) have also emerged as important intermediaries, offering regional coordination, unlocking the potential of blended finance, and emphasising cross-LA data integration. However, many areas lack equivalent structures, and LA capacity has been significantly weakened by years of austerity. Community actors — including residents, faith groups, charities and community energy groups — are under-utilised, with participation often being tokenistic rather than genuinely empowering. There are clear social justice issues that accompany a dependence on voluntary support, however.

3. Funding has been fragmented, short-term and poorly targeted

Decades of stop-start policy have produced both a fragile supply chain and installer network. The Warm Homes Plan [1] represents a significant step forward — consolidating schemes and directing funding to LAs — but faces criticism for prioritising technology deployment over fabric interventions, for insufficient rebalancing of electricity-to-gas price ratios, and for risks that area-based targeting may exclude eligible households based on geography rather than need. Blended finance models show considerable promise but remain untested at scale, lack clarity pertaining to how the Warm Homes Plan [1] will help to ‘pump prime’ them, and raise a number of social justice issues.

Recommendations

1. Adopt holistic approaches with greater precision in terminology

Government should establish mutually agreed, clearly defined terminology for place-based policy. 'Place-based' should be understood as a conceptual lens foregrounding social, cultural and economic context; 'area-based' as a delivery model targeting defined sub-local geographies; 'local' as referring to local authority governance; and 'community-led' as a distinct approach centring resident empowerment. Conflation of these terms risks undermining effective delivery, so the government should ensure they are negotiated and mutually-agreed across sectors and scales. Both the recent Warm Homes Plan [1] and Local Power Plan [2]

evidence this conflation.

2. Clarify the roles and responsibilities of multi-scalar actors: support Local Authorities

There is an urgent need to define what is expected of residents, community groups, local authorities, and combined authorities in delivering place-based decarbonisation. In particular, local authorities face significant capacity constraints but are increasingly framed as key delivery agencies. The Warm Homes Agency could play a central role in facilitating knowledge exchange vertically (across governance scales) and horizontally (between Local Authorities and Combined Authorities, as well as between community groups), and in managing risks of fragmented delivery. The Warm Homes Agency must remain supportive of Community Energy initiatives, integrate with the Local Power Plan [2], and outline how schemes will coordinate with local and combined authority initiatives.

3. Ensure long-term funding stability for both fabric and technology interventions

The current emphasis on technology deployment (e.g., batteries, heat pumps, solar) in the Warm Homes Plan [1] is a welcome development, but risks leaving fabric performance deficits unaddressed, undermining energy savings, bill reductions, and broader health and social justice benefits. Funding must be stable, long-term and sufficiently flexible to support the full range of fabric and technological interventions required by different places. Grant targeting should prioritise the most vulnerable households.

4. Initiate a 'state of data' and place-based skills review

Data quality — including EPC data, tenure information and health vulnerability indicators — needs to be significantly improved to support effective place-based targeting. The Government should launch a ‘state of data’ review for energy efficiency and heat decarbonisation in partnership with place-based actors, trialling innovative data collection methods. Alongside technical skills gaps, there remains a significant deficit in social and place-based expertise within local delivery organisations which should be addressed.

5. Build local capacity and embed advice within place-based delivery

Decades of hollowing out LA capacity cannot be reversed overnight. The shift towards devolved delivery risks a 'local shock' if adequate funding and training are not provided. Similarly, community groups and charities require meaningful support to participate as delivery partners — not simply as vehicles to ensure the success of government-designed programmes. Integrated advice and delivery services (such as one-stop shops) should be embedded within trusted local organisations to reach households most in need.

1. Introduction

Cold, damp and poorly ventilated homes contribute significantly towards physical and mental illness and socio-economic deprivation. The UK currently has the worst quality housing stock in Europe. In 2023-2024, the UK government calculated that ~3.6 million households in England (14%) were living in non-decent homes, failing the statutory 'Decent homes Standard'. Such issues have inherently social and spatial (socio-spatial hereon) dimensions, with significant differences in how pervasive such issues are between local areas. As the National Retrofit Hub [3] observes:

"Housing stock does not emerge by accident; its condition and typology also reflect decades of planning policy, historic land ownership, investment, neglect, and local responses to environmental pressures. These forces determine not only how buildings perform today but also how people experience them, whether homes feel safe, comfortable, and dignified. In this way, the nature of the built environment becomes inseparable from the nature of the community that inhabits it". (p. 13)

The challenges related to housing conditions can be addressed by improving the energy efficiency of existing building stock, using a combination of fabric retrofit, decarbonised heating systems and smart technologies. Through decarbonising buildings and heat, these interventions can not only help address geographically differentiated health, energy and economic inequalities, but also support the delivery of the UK's net zero commitments. Buildings account for approximately 22% of UK territorial greenhouse gas emissions[i]. Currently, progress in reducing emissions in this sector is not on track [4] [5] - according to the UK Government, emissions from buildings and product uses rose by 4% in 2024 compared to 2023 [4] [ii]. Therefore, accelerating the decarbonisation of residential buildings will be central to delivering emissions reductions throughout the 2030s [6].

To date, energy efficiency interventions have been delivered by a diversity of actors working across the public, private and third sectors, at different scales, utilising different funding mechanisms, and with different powers and degrees of legal and regulatory responsibility. Some have focused on profit, whilst others on achieving charitable aims. The delivery of such interventions is a complex picture. There is currently devolved responsibility for addressing building and heat decarbonisation in Scotland and Wales, shaping the degree of emphasis on place-based approaches. Moreover, the devolution agenda has progressed in the UK[iii], placing greater emphasis on the role of local actors – such as local authorities and communities - in delivering energy efficiency measures. Combined, these distinctions have drawn attention to the 'local' socio-spatial dimensions of governing, funding and delivering

[i] Residential buildings account for approximately 66% of total buildings emissions. The remainder includes 16% in commercial buildings, 11% in public sector buildings, and 6% in other buildings and product use (UK Government, 2024).
[ii] Emissions from residential buildings are strongly shaped by weather fluctuations also (Climate Change Committee, 2026).
[iii] Particularly in England and Wales through the Cities and Local Government Devolution Act 2016 and further in England through the Levelling-up and Regeneration Act 2023
[4] Though such approaches have been trialled and utilised for longer in Scotland and Wales – see section 4.1.

energy efficiency policies, and renewed emphasis on the role of place-based thinking for designing and delivering building and heat decarbonisation pathways[iv].

Recent discourse from the UK government exemplifies this. The current Labour government has committed to using 'place-based policymaking' to deliver its energy efficiency ambitions. The Warm Homes Plan [1] emphasises devolving responsibility to LAs, and a new Warm Homes Agency will "*have a critical role in place-based delivery*" (p. 81). Overall, this 'localist' approach aims to address national-local gaps in decision-making, empowering local actors "*who know their area best*" to deliver building and heat decarbonisation (Ibid).

Despite these changes, many questions remain. First, it is currently difficult to discern how the UK government defines a place-based approach towards building and heat decarbonisation. A persistent problem in the Warm Homes Plan – and in policy and academic discourses more generally – is the utilisation of cognate terms synonymous with the 'local', including 'areas', 'neighbourhoods', 'communities' and 'places' [7].

To date, there has been little synthesis of what these different terms mean, how they differentiate from each other, and how they have been adopted by different actors working in the building decarbonisation sector. We argue that failing to synthesise this understanding and develop a mutually agreed terminology could create confusion, particularly as the delivery of building and heat decarbonisation becomes more complex (e.g., an increasing emphasis on context-specific energy plans and a greater diversity of actors involved). Similarly, there has been little synthesis of what the most effective approaches to place-based delivery of building decarbonisation are. Who does the UK government view as important intermediaries, and who should be empowered? What evidence of good practice already exists? Failure to synthesise existing learning and good practice can undermine the capacity to 'speed up' and 'scale up' such approaches, leading to a repetition of mistakes and wasted resources.

This scoping review aims to address these gaps. It examines how place-based approaches to building and heat decarbonisation have been – and currently are – differentially represented in policy and practitioner literature from 2010 to 2026, with the aim of informing ongoing development and delivery of such approaches. It reflects upon distinctions between government-led and non-governmental-led (NGO) approaches towards place-based thinking in the context of building and heat decarbonisation.

The report has the following structure. The remainder of Section 1 broadly distinguishes what a place-based approach to building and heat decarbonisation encompasses; distinguishing between the design and delivery of such approaches. It draws attention to both the cognate key terms which add complexity to conducting this review, and the arguments which underpin the utilisation of place-based delivery approaches. Section 2 outlines our methodology for identifying, analysing and synthesising government policy and NGO narratives on place-based approaches to

energy efficiency and heat decarbonisation. Section 3 first presents the key findings from the British, Scottish and Welsh Government policy analysis, as well as reviewing insights from non-governmental organisations. Section 4 discusses the implications of these findings and offers policy recommendations, which are particularly applicable for helping to guide the remit of the newly established Warm Homes Agency.

1.1 How place relates to building and heat decarbonisation

In academic terms, 'place' is a world view where "*social relations are emplaced – those events happen 'somewhere' in a place that is more than just a backdrop, but a constitutive part of reality*" [7] (p. 2). Adopting a place-based lens means committing to an explicit focus on the specific characteristics of a spatial context (e.g., the visual, audible and aesthetic conditions of the environment, air quality, building quality), and how those characteristics differentially shape the lived experiences of the people living within, or interacting with, those places. This includes how those people draw meaning from – or build attachment to – those spatial contexts, and how they shape the conditions of what is or is not possible socially and economically. Place is also a multi-scalar concept (e.g., regional, local) [8] and relational construct, meaning that different scales of places can co-exist and interact with each other - for example, Castle Vale (a place) within Birmingham (a place) within the West Midlands (a place).

Accordingly, adopting a place-based approach towards building and heat decarbonisation necessitates focusing on the interactions between the different meanings and experiences people have of those places, the presence and quality of relevant infrastructures (and their interrelations), the quality of local housing stock, and specific socio-economic conditions of a place [3]. Combined, these factors shape the responses people have towards building and heat decarbonisation, but also the effectiveness of those approaches.

Multiple rationales have been put forward for addressing building and heat decarbonisation through place-based approaches [9]. These include more cost-effective delivery through aggregating demand across a locality; the ability to design programmes around the realities of people's lives and social relations; greater involvement of locally trusted actors who are better placed to engage households and address fuel poverty in a joined-up way; support for local supply chain development; and the coordination of retrofit with wider infrastructure decisions — such as heat network development and grid reinforcement — that fragmented household-by-household action cannot achieve. Place-based approaches are often framed as generating greater 'acceptance' of household energy interventions (both fabric, such as insulation, and low carbon technologies, such as solar panels and heat pumps) by residents, though this generalisation is disputed [9]. Nonetheless, it is increasingly recognised that failing to adopt a place-based approach can mean interventions are "*technically correct but socially ineffective*" [3] (p.13), despite inherent conceptual and practical complexities.

Conceptually, place terminology is fuzzy; different terms can be used interchangeably, and place can be measured in different quantitative and qualitative ways [7]. Moreover, those terms encode different meanings to actors working across different sectors, as there is no overarching, consistent, mutually-agreed and multi-sectoral terminological basis established. The recent Warm Homes Plan showcases this complexity with the terms ‘place-based’, ‘area-based, ‘neighbourhood-based’ and ‘street by street’ all used throughout the document [1], but not clearly defined or distinguished from each other. To support greater consistency and precision in terminology – and recognising the complexities such differences have for conducting this review – we define and distinguish these terms in Table 1.

In practical terms, there are significant complexities about how to define the boundaries of a place, and the responsibilities of different actors therein for delivering building and heat decarbonisation programmes. At a superficial level, a place-based approach to delivery means organising retrofit and heat decarbonisation delivery around a ‘defined geography’ — a street, neighbourhood, estate, town, or local authority area (see Table 1) — rather than leaving it to individual households to opt in to national schemes. But there are other complexities to consider, including which actors are empowered or considered responsible for overseeing and delivering such schemes, what degree of funding and resourcing is available (devolved) to those actors, and how much autonomy they have to identify, design and deliver their own place-based schemes. There are also complexities about how to manage and coordinate diverse place-based actors and programmes, both to ensure fair access, but also to ensure that wider national policy agendas are met.

In sum, there is a need to further interrogate the conceptual ambiguity between these terms; the similarities and differences between how they are used, whether they have been employed in complementary or contrasting ways by different actors, and how they are operationalised to achieve particular policy outcomes. Moreover, there is an explicit need to examine how this terminology has shaped delivery mechanisms for building and heat decarbonisation to date. Failure to synthesise this learning poses a significant risk to the efficacy of emergent place-based building and heat decarbonisation policy. Without shared and consistently applied terminology, the capacity for different actors to coordinate around agreed priorities risks being significantly undermined.

Cognate term:	Definition:
Place-based approaches	A conceptual view which contends that particular spaces are not merely physical locations but shared sites of meaning – shaped by distinctive histories, evolving relationships between people, ongoing social and economic activities, and infrastructures which come together and relate in specific ways at specific times. In the context of building and heat decarbonisation a place-based approach foregrounds focusing on the characteristics of places in the design and delivery of programmes, recognising that effective policy must be responsive to the specific social, cultural and economic fabric of a given area.
Local approaches	A scalar description demarcating the level at which energy efficiency and heat decarbonisation programmes are designed and delivered. Local approaches are typically distinguished from national (top-down) policy by their targeted focus on a defined geography — whether a local authority area, town, or other sub-regional unit — and on the institutional and governance capacity available within that geography to plan and deliver objectives. The term local mostly closely associates to local authority-led governance of building and heat decarbonisation.
Community-led approaches	A specific approach to building and heat decarbonisation which places issues of social (in)justice and resident empowerment at the centre. Community-led programmes engage residents as active, co-creating participants in the design and delivery of building and heat decarbonisation programmes. This often includes embedding principles of community wealth building and/or upskilling local people. Community membership may be defined by geography or by shared identity or interest.
Area-based approaches	A delivery model concentrated on a defined 'hyper-local' geography – typically a cluster of streets or a specific housing estate – treating those areas as a single integrated programme. By combining different housing tenures and property types within a locality, area-based approaches can enable bulk procurement, shared contractors and coordinated residents and community engagement. This generates cost efficiencies and supports more consistent outcomes than property-by-property delivery. Neighbourhood and street-by-street approaches are both sub-forms of area-based approaches.
Neighbourhood approaches	A sub-form of area-based delivery focussed on delivering retrofit within a recognisable community unit. The neighbourhood provides both the social reference point for resident engagement and a practical unit for coordinating property types, tenures and residents within a single programme.
Street-by-street approaches	A sub-form of area-based delivery in which retrofit activity is sequenced and organised across entire streets at a time. The approach aims to utilise economies of scale by enabling contractors to work on a focussed number of streets concurrently, reducing costs and disruption. This smaller geography can also support community engagement. It is particularly suited to areas of consistent housing stock, such as terraced housing, where a single design and procurement process can be adopted.

Table 1: Cognate terms used synonymously with place-based approaches to retrofit and heat decarbonisation.

2. Methods

This scoping review focuses on Great Britain[v] and aims to evaluate how place-based (and cognate) approaches to building and heat decarbonisation have been employed across public, private and third sectors in GB since 2010, and identify learning for future policy.

We acknowledge that policy documents function as a form of strategic discourse by different politically-oriented actors, meaning that there may be gaps between the ambitions or commitments expressed and what is delivered in practice. Analysis therefore considers both policy narratives and specific policy funding and delivery commitments.

2.1 Systematic and interpretative search protocols

A search for policy documents related to building and/or heat decarbonisation in the UK was conducted in two phases. Phase one examined UK, Scottish and Welsh Government approaches to place-based retrofit and heat decarbonisation between 2010-2026 (section 4.1), with policy documents collated from Gov.uk and Overton using appropriate filters (Figure 1). Phase two examined how non-governmental organisations discussed place-based approaches to building and/or heat decarbonisation over the same time period (section 4.2). For phase two, the same search approach was applied to non-governmental sources via Overton only (Figure 2). Academic publications were not considered in the scope of this study. For both phases, the following search operation was utilised:
("energy efficiency" OR "retrofit" OR "building decarbonisation" OR "heat decarbonisation") AND ("neighbourhood" OR "place-based" OR "street-by-street" OR "area-based" OR "community-led" OR "local authority" OR "local government" OR "regional authority" OR "combined authority").

To increase robustness, the systematic literature search was combined with an interpretative approach. This means examining whether any key documents – gauged by the expertise of the reviewers – had not been identified through systematic search protocols. This added 15 publications in the national review, and 51 publications in the sectoral review (Figures 1 and 2).

As documents were collated, they were screened in three stages. First, the title of the publication was reviewed to ensure relevance. Second, document summaries and/or excerpts provided on Overton were reviewed. Some documents had matching key search terms but remained irrelevant (e.g., focused on community-led schemes

[v] Policy documents from the UK, Welsh and Scottish Governments, and reports from non-governmental organisations were analysed. While some of these documents refer to the United Kingdom (UK), heat and building decarbonisation is largely devolved in Northern Ireland. Analysis therefore focusses on GB rather than the UK.

unrelated to energy efficiency or building decarbonisation) or search terms appeared in the bibliography of the document but not the main text. Third, key term searches were used to skim read documents, checking for relevance. After screening, 68 documents remained for the national review, and 57 documents for the systematic review, totalling 125 documents.

The full dataset of documents analysed is available upon request and will be deposited with the Energy Data Centre Autumn 2026.

2.2 Data analysis

Details of documents were tabulated on a spreadsheet (title, organisational authors, government during which a document was published (phase one only), month/ year of publication and geographical scope, Overton document summary).

Each document was analysed by the lead author, using Artificial Intelligence (AI) to help improve the efficiency and speed of the analysis. A PDF of each document was uploaded to *ChatPDF*, and the AI tool was provided with the following command:

[Command]: Review the entire document for specific references to "street-by-street", "neighbourhood", "place-based", "area-based" or "community-led" design and delivery of energy efficiency, retrofit and heat decarbonisation measures. Summarise the overall approach in the document to building and heat decarbonisation. How frequent and salient are references to “street-by-street", "neighbourhood", "place-based", "area-based", “local” or "community-led" design and delivery?

ChatPDF identified all the sections of the documents where these key words appeared, saving time – particularly in larger documents (some in excess of 200 pages). All documents were also manually analysed by a researcher, paying specific attention to the sections identified by *ChatPDF*, alongside the executive summary and introductory sections. Analyses considered both the design and delivery of place-based approaches to building and heat decarbonisation. First, concerning design, we recorded the frequency of key terms utilised in each document (specifically in relation to building decarbonisation), how they were defined in each document (if a definition was given), and the rationale for employing them. Second, concerning delivery, we identified and tabulated several key themes:

- Governance (the extent to which the document discusses the top-down, bottom-up, or community-led governance of building decarbonisation);
- Key actors identified in the delivery of building decarbonisation;
- Planning, finance or policy mechanisms discussed;
- Technologies included within building decarbonisation scenarios (and the integration of those technologies, e.g., in ‘whole house retrofits’);
- Intended recipients of building decarbonisation (e.g., a strategic focus on the fuel poor vs. a broader ‘offer for all’ approach);
- Relevant case studies (examples of good practice).

Once data had been tabulated, the degree to which documents engaged with place-based approaches to building decarbonisation was classified as *strong, moderate* or *weak*, in line with Appendix 1. This helped to initially gauge how prevalent place-based approaches were within the document.

To increase robustness, this analysis was completed twice for every document – including the use of AI – to check for consistency and correct any errors made during the data entry process. Additionally, the second author randomly selected 15 papers (~10% of the sample) and independently analysed them (again using AI), tabulating data onto a blank workbook. These were compared by both authors to check for consistency.

2.3. Limitations

Whilst multiple efforts were made to ensure the robustness of document selection and analysis, some limitations exist. First, the use of keywords strongly shaped the inclusion or exclusion of documents. The researchers sought to address this by using multiple search terms and combining systematic and interpretive searches. However, the interpretive approach was also limited to the scope of knowledge of the researchers, combined with reviewing references to missing documents in the systematic corpus. Therefore, some documents may be missing from the final corpus.

Second, the use of AI brings some potential limitations. We were interested in the role AI can play in assisting with the completion of rapid evidence reviews. However, Large Language Models can make mistakes. We have been cautious throughout the process, employing it primarily to streamline the creation of document summaries, to conduct word counts of key terms, or to extract case studies from documents. We sought to limit any potential inaccuracies or bias in the AI through sense-checking the material, including the use of a secondary blind analysis.

Nonetheless, we noted some inaccuracies with AI, particularly in how it would conflate the use of key terms (e.g., the term ‘community’ is mentioned and flagged as an example of a ‘community-led’ scheme). In some instances, the AI inferred a strong place-based approach even when these terms were seldom used in a document. These issues were most prevalent when the AI was given more holistic ‘net zero’ documents, which included building and heat decarbonisation, but were less concentrated on such issues specifically. In these instances, the AI would often claim that place-based approaches were prominent in relation to energy efficiency and heat decarbonisation if they were prevalent in sections focusing on other decarbonisation pathways (e.g., transport).

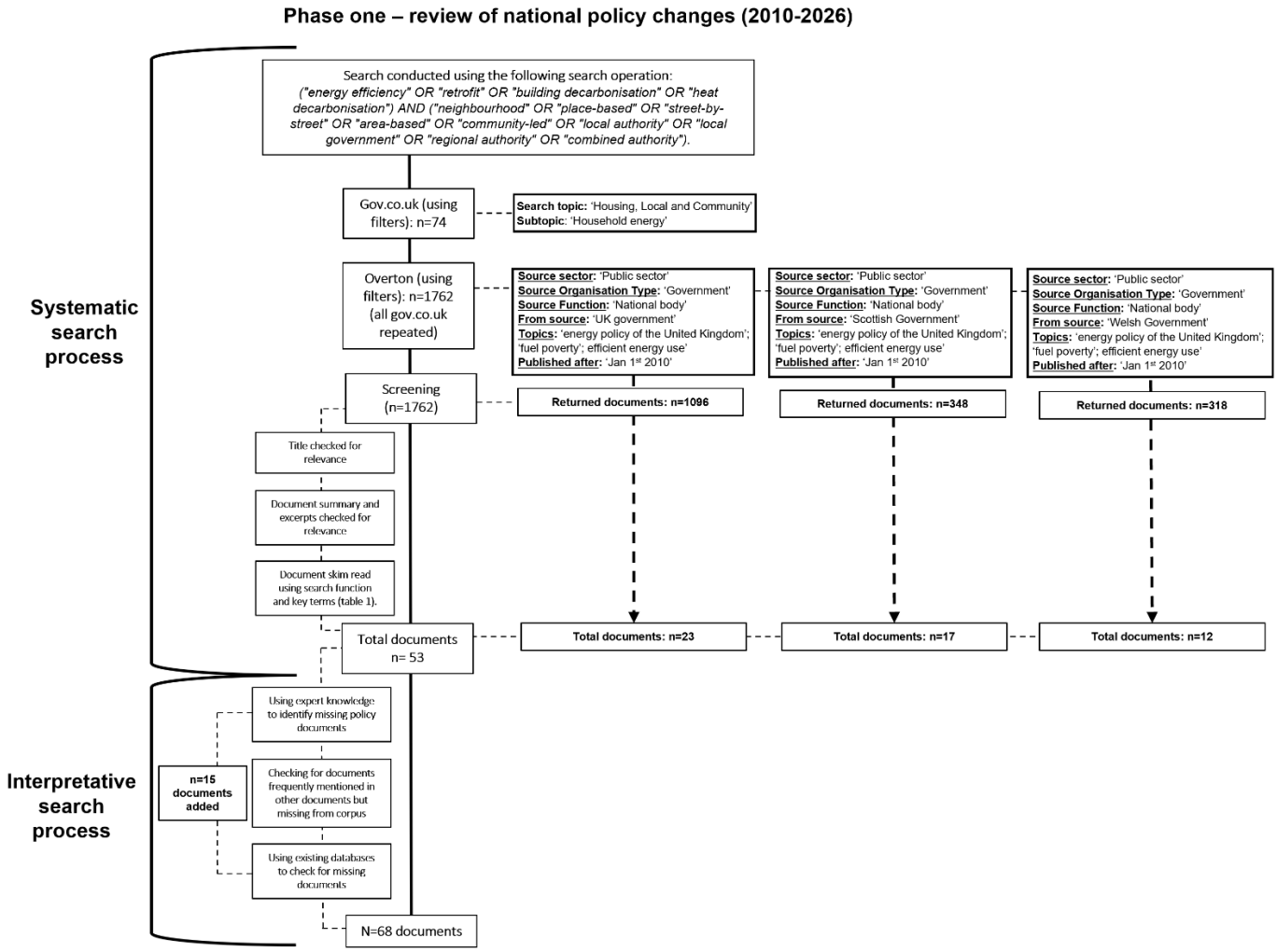

Figure 1: The systematic and interpretative processes employed to find, select and filter British Government, Welsh Government and Scottish Government policy publications.

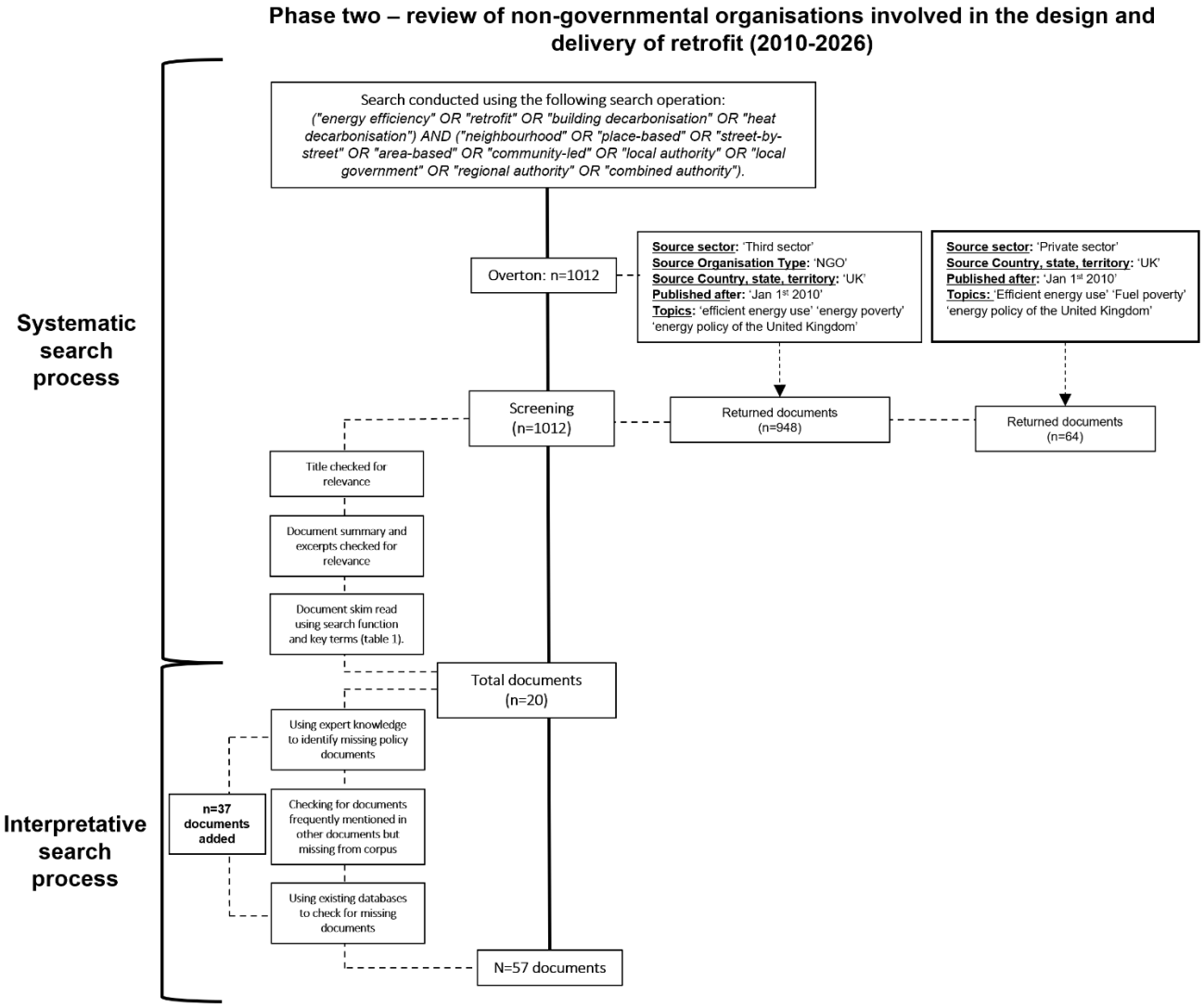

Figure 2: The systematic and interpretative processes employed to find, select and filter non-Governmental publications.

3. Results

This section outlines how place-based thinking on building and heat decarbonisation has developed across UK, Scottish and Welsh government policy (3.1) and across the NGO sector (3.2) between 2010 and 2026. The analysis in this report focusses on 2010-2026, however we recognise that there is a much longer history of place-based delivery of energy efficiency in GB, particularly in relation to local authority action on fuel poverty and affordable warmth. For example, the Home Energy Conservation Act (1995) required all LAs to identify residential accommodation within their area that could benefit from energy efficiency measures. The subsequent Community Energy Saving Programme (CESP, 2009-2012) required energy companies to deliver energy efficiency measures in targeted low-income areas.

3.1 National policy review

This section is organised broadly around changes in UK governing party, given the comparative political stability of Welsh (Labour) and Scottish (SNP) governments over this period (though not exclusively).

3.1.1 Emergent place-based thinking (Conservative-Liberal Democrat Coalition Government, 2010-2015)

The analyses of UK government policy documents from the 2010-2015 Conservative-Liberal Democrat Coalition Government illustrates a primary emphasis on top-down strategic frameworks, such as the Green Deal, to deliver building and heat decarbonisation. Nonetheless, there was some evidence of place-based thinking during this time, with three main themes.

First, heat decarbonisation starts to be framed as a multi-scalar and spatially-variegated issue. For example, the document 'The Future of Heating: A Strategic Framework for Low Carbon Heat in the UK' [10] notes that the transition to low carbon heat will be a *"national transformation, and also a local one, with different solutions for different localities and geographies as households, businesses and LAs choose the approach that will work best for them"* (p. 5). This document highlights the inherently local dimensions of heat by drawing upon case studies which emphasise how planning for heat is shaped by local circumstances, including council ambition, historical context, institutional context, geological context and housing stock type. The latter document – 'The Future of Heating: Meeting the Challenge' [11]- develops specific place-based policy measures, particularly in relation to heat networks, with the establishment of the Heat Networks Delivery Unit to support LAs in mapping local sites suitable for heat networks, and assist with negotiations between planners and developers. Overall, not only was there a significant increase in emphasis on heat decarbonisation during this period, but also some narrative commitment to supporting a more context-specific and spatially-variegated approach to designing and delivering heat decarbonisation policy.

Second, LAs are positioned as important and strategic partners in guiding building and heat decarbonisation strategies, with multiple references to how LAs 'know the challenges of their area best' [10]. LAs are most strongly valued in heat network planning, including managing relationships between the heat supply chain and local demand, using heat mapping to identify opportunities, integrating national heat decarbonisation schemes with fuel poverty targets, and coordinating community energy (CE) initiatives. In relation to installing energy efficiency measures in building decarbonisation, LAs are positioned as intermediaries with strong capacity to engage with hard-to-reach groups [12] or drive awareness and uptake of energy efficiency measures [13]. However, despite these acknowledgements, most building decarbonisation schemes remained centralised – through schemes such as Warm Front and ECO1 – with limited responsibility devolved to LAs.

Third, several policy documents referenced the role of community actors in delivering building and heat decarbonisation measures [see 14, 15, 16]. For example, the 2015 Community Energy Strategy [16] recognised that *"community energy offers significant opportunities with regards to the local authority policy context, including reducing fuel poverty and increasing economic regeneration"* (p. 33). There was also wider policy interest in empowering community actors. Through widening their participation within neighbourhood planning, the coalition government hoped to empower communities to take charge of reducing energy demand, with a desire to support instances "*where communities identify this as a priority for their neighbourhood" (ibid).* Consequently, the Department of Energy and Climate Change was tasked with coordinating advice services which ensure that interested communities *"have access to advice, best practice on neighbourhood planning for community energy, together with information on existing examples"* [16] (p. 33).

Overall, despite being more of a framework than a specific delivery model, this interest in community energy and community actors indicates that community empowerment and bottom-up governance of projects were emerging as viable elements of building and heat decarbonisation during this time. Nevertheless, policy support during this period tended to focus on energy generation projects, with limited emphasis on community empowerment and participation in heat decarbonisation (beyond the broad commitment to neighbourhood planning). Instead, heat policy continued to rely on top-down coordination between central government, LAs, energy companies and industry. As a result, there is a notable gap in policy attention on how Community Energy generation projects interact with heat decarbonisation pathways, and how Community Energy plans might be more meaningfully integrated into broader decarbonisation strategies. In sum, whilst the policy landscape demonstrates piecemeal elements of place-based thinking, it lacked specific financial and regulatory mechanisms to support place-based approaches and provided limited empowerment of local actors to lead on building and heat decarbonisation.

Comparing these trends to Scottish and Welsh Government policy reveals several differences, with both devolved nations beginning to commit more clearly to area-based delivery mechanisms. In 2013, the Scottish Government demonstrated a commitment to area-based schemes for building and heat decarbonisation by allocating £79 million to establish the Home Energy Efficiency Programme for

Scotland (HEEPS) scheme. HEEPS was the Scottish Government's flagship initiative to tackle fuel poverty and improve domestic energy efficiency, with the majority of funding directed to Area-Based Schemes (HEEPS: ABS), delivered by LAs. Here, place is clearly utilised as a delivery unit for building and heat decarbonisation, even if many of the policy and financial mechanisms remain inherently top-down [55]. However, it is notable that there is an absence of references to place, despite the concurrent 'Creating Places' policy statement published in 2013, which focuses on the role of architecture in creating "*quality places*":

"A successful place is accessible to all and encourages people to connect with one another. The relationships which are fostered help to create communities where there is a high level of positive activity and interaction. These are communities which are safe, socially stable and resilient" [18] (p. 15)

This contrast demonstrates how area-based approaches towards building and heat decarbonisation were viewed primarily as a delivery mechanism, rather than as integrated within a holistic view of place.

Similarly, Welsh policy also begins to structure policy delivery around area-based models, through the development of the Welsh Government's Warm Homes Programme – including the Nest and Arbed[vi] schemes [19]. Both schemes emphasise targeting fuel poverty in "*low-income households and those living in deprived communities*" (Ibid, p. 3), with emphasis on enabling "*smaller companies to collaborate and compete with larger companies, and in sourcing materials from within Wales*" (ibid, p. 41). In particular, the Arbed Scheme was proactive in using the Welsh Index of Multiple Deprivation and data on hard-to-treat homes to try and identify clusters – streets and neighbourhoods – where economies of scale in energy efficiency interventions were possible. Like Scotland, Wales also had references to place in architecture, with sporadic – but undefined – references to 'placemaking', but such references were isolated from building and heat decarbonisation policy [20].

3.1.2 Towards industry-led, Smart Local Energy Systems (Conservative majority government, 2015-2024)

During the 2015-24 Conservative majority government, building and heat decarbonisation policy saw greater centralisation of funding, the closure of several schemes and a weakening of discursive and policy commitment towards decarbonisation. Beginning in 2015 under David Cameron, there was a considerable rollback of green policies and programmes, including scrapping the Green Deal scheme and Zero Carbon Homes Standard for new builds. National subsidy schemes became increasingly technology-neutral throughout the Energy Company Obligation scheme (ECO, the Green Homes Grant, and the Boiler Upgrade Scheme.

[vi] The NEST scheme provided free energy efficiency improvements to fuel poor households, whilst Arbed took an area-based approach which targeted specific communities.

They were competitively awarded through bidding mechanisms. Local delivery was further challenged by significant austerity-driven cuts to local authority budgets, further marginalising these actors.

Developments to the ECO scheme exemplify a broader shift towards a spatially-agnostic approach, in contrast with the specific targeting of low-income areas of its predecessors, such as the Community Energy Savings Programme and Carbon Emissions Reduction Target. ECO evolved across successive phases, reflecting shifting government priorities – from dual carbon reduction and fuel poverty aims (ECO1, 2013-15), to a greater emphasis on fuel poverty alleviation and simplified delivery (ECO2, 2015-17), to broader eligibility intended to reach more low-income households (ECO3, 2018-22). However, each phase attracted significant criticism; ECO1 was characterised by piecemeal household-level interventions that failed to meet fuel poverty and decarbonisation targets; ECO2 was undermined by insufficient funding mechanisms and the transfer of costs to consumers (through the bill levy mechanism), and ECO3 was hampered by restrictive and confusing eligibility criteria, such as excluding low-carbon electric heating [21]. Renewed ambition towards energy efficiency and low carbon heat was pledged during the 2019 Conservative manifesto and later 'Heat & Building Strategy' [22]. However, the Green Homes Grant delivery schemes – framed as a post-Covid green recovery approach – were highly unsuccessful and later cancelled. Minimum energy efficiency standards in rental properties were scrapped in 2023.

Concerning place-based approaches, several trends are evident. First, there is a discursive shift in the terminology used to describe place-based approaches to decarbonisation, with emphasis shifting from community-led approaches towards terms such as "*local areas*" and "*local energy*", which are less specific on the role of citizens and operate on 'fuzzier' conceptual boundaries [23]. Alongside this, the 'local' becomes increasingly framed in terms of potential for industrial growth and market-led decarbonisation. For example, the 'Clean Growth Strategy' [24] frames engagement and participation in terms of economic coordination and national economic growth, rather than through citizen empowerment or the context-specific challenges of an area. It states that each local area is "*responsible for coordinating its own local industrial strategy in alignment with the national Industrial Strategy*" (p. 118), underscoring "*the importance of anchoring economic growth in the strengths of local areas*" (p. 118), but not on addressing specific social challenges. This reinforces a market-oriented framing which became prevalent during this era, with a notable decrease in use of terminology such as 'area-based', 'neighbourhood-based' or 'community-led'.

Second, in terms of delivery, there is reduced emphasis on the role of LAs and community energy groups as leaders in decarbonisation, and much greater emphasis on private sector actors. The 'Smart Heat and Building Strategy' [25] illustrates this, positioning LAs as intermediaries, valued for their "*established relationships with key local stakeholders including utilities, highways, public sector partners, social housing landlords, businesses, industry and developers*" (p. 134), rather than as central agents of change. Thus, the emphasis shifts to how LAs can use their pre-existing relationships and connections to support industry-led projects.

This was principally achieved through innovation funding, such as the Prospering From the Energy Revolution programme (PFER)[vii], which brought LAs, researchers and industry together to develop learning and investable business models for smart local energy systems [26].

Despite an increasing emphasis on LAs as convenors rather than leaders, some LAs nonetheless sought to assert agency over building and heat decarbonisation during this time. Following the retraction of the Green Deal, a number of LAs developed their own energy companies, such as Nottingham's Robin Hood Energy and Bristol Energy, though both were sold in 2020 due to financial pressures. More broadly, in 2019, many LAs in the UK (~80%) declared climate emergencies. Declarations signalled political intent but, given the absence of adequate powers and resources, many remained largely symbolic [27]. Taken together, these initiatives reflect a tension between LA ambition and the constraints imposed by limited devolution of funding and responsibility.

A partial but significant shift came with the 'Local Authority Delivery' scheme (2020), which repositioned LAs as active leaders in retrofit, rather than peripheral intermediaries. This was a major change, providing LAs with direct funding agreements, enabling them to procure contractors, coordinate local supply chains, manage quality assurance and report on outcomes. During this time, more discursive emphasis was also placed on LAs as delivery partners on heat networks; however, this role remained poorly integrated with wider energy efficiency and heat decarbonisation activity, and the lack of clarity on LA roles and responsibilities in decarbonisation persisted [28]. Subsequent developments, including provisions for heat network regulations and zoning in the Energy Act 2023, suggest a continuing, if partial, recognition of LA's role in guiding heat decarbonisation.

This era also saw a significant retrenchment of emphasis on community actors. Concerning Community Energy, the government abolished the 'Community Energy Contact Group' in 2017, in favour of a 'Local Energy Contact Group', and a range of policies which supported community energy were scaled back or ended. This includes the Feed-in-Tariff – one of the major financial mechanisms underpinning community energy projects – which was reduced substantially in 2016 and ended in 2019. A number of community energy tax reliefs[viii] were also closed in 2015, removing a key tool which community groups had used to raise investment from residents. In place of community-led approaches, policy increasingly positioned people as 'active consumers' or 'prosumers' within smart energy system business models, reinforcing the primacy of private sector actors in energy system governance [29]. In addition, policy and funding, such as the Smart Systems and Flexibility Plan [30] and the PFER programme, tended to prioritise flexibility over energy efficiency. Some PFER projects, such as Zero Carbon Rugeley and Project LEO, did develop business models to integrate efficiency and flexibility, but these remain exceptions rather than the norm [26] [31].

[vii] Part of the Industrial Strategy Challenge Fund and coordinated by Innovate UK.
[viii] Enterprise Investment Scheme, Seed Enterprise Investment Scheme, and Social Investment Tax Relief

These changes are a stark contrast to policy developments in Scotland, where energy efficiency was established as a National Infrastructure Priority (in 2015). Place-based approaches were supported through two programmes – Scotland's Energy Efficiency Programme (2016) and the later Energy Efficiency Scotland Programme (2018) [32] – which set clear long-term energy efficiency standards for all buildings. There is also continued focus on area-based delivery (HEEPS:ABS) and discursive interest in expanding such schemes into the able-to-pay market (p. 51).

Moreover, the Scottish Heat in Buildings strategy [33] states clear interest in supporting a "*place-based and community-oriented approach*" (p.43), building upon the longstanding roles community actors have played "*in planning, identifying and delivering projects on heat and energy efficiency… [ranging from] decarbonising community assets such as halls and community centres, or community ownership or co-ownership of communal heating solutions, such as heat networks*" (p. 44). This is reinforced by £5.25 million in 2021 committed to the Community and Renewable Energy Scheme (CARES), with an additional £3 million to support projects in remote and off-grid rural and island communities.

In Scotland, the role of LAs in coordinating and delivering heat decarbonisation was supported by the development of a statutory duty for all LAs to develop Local Heat and Energy Efficiency Strategies and delivery plans (LHEES). This duty (in place from 2022) requires LAs to identify "*strategic zones*" for decarbonisation measures, and to identify more granular "*delivery areas*" where programmes and investments can be directed. The LHEES duty is supported by a detailed methodology (developed through several years of pilot schemes) and multi-year funding of £75,000 per LA (to 27/28) to support the development of a data-led, locally tailored approach to building decarbonisation.

Multiple documents associated with the Local Energy Policy Statement [34] define LHEES as sitting *"at the heart of a place-based, locally-led and tailored approach to the heat transition"* (p. 5). The language between local and place started to become interchangeable, with clear recognition that "*each local area will have different physical characteristics, for example, geography, building stock, and existing energy infrastructure*" (p. 18). This is likely because LA boundaries became synonymous with definitions of a 'place' owing to the increasing emphasis on LAs as coordinating building and heat decarbonisation. Nonetheless, there is clear evidence of greater granularity within these place-based schemes, with *"delivery areas"* being fluid and differentially defined as *"streets or blocks… a subset area of existing place-based or city-wide activity, or be centred around specific technology interventions"* (ibid, p.7). This suggests greater attention to the relational and multi-scalar dimensions of place within Scottish policy at this time.

However, building and heat decarbonisation policy in Scotland remained largely top-down, with place-based approaches confined to delivery mechanisms and discourse. Financial support for LAs for LHEES was important, but represented a relatively small level of resource relative to the scale of delivery required. To date, this capacity remains a challenge for many LAs, and there is a need to align funding

schemes (including GB-wide schemes such as the WHP) with LHEES priorities. Multiple delays in laying the Heat in Buildings Bill before Parliament have also created uncertainties in long-term policy and standards [35].

Welsh policy during this period displays similarly strong discursive commitment to area-based schemes, but experienced more significant setbacks in terms of delivery. In 2021, the area-based Arbed fuel poverty scheme was scrapped due to structural and delivery issues. This was partly due to the Covid-19 pandemic, but also related to challenges in the targeting model which relied on incomplete (e.g., ignoring private renters) and out-of-date EPC data, which failed to capture improvements already made to homes. More fundamentally, the scheme's premise – that fuel poverty is clustered in easily identifiable pockets of poor housing – proved inaccurate, with socio-economic factors resulting in a complex spatial spread of fuel poverty. A subsequent audit found that ~98% of heating interventions in homes were fossil-fuel based systems, meaning the programme tackled fuel poverty but failed to decarbonise homes. In 2020 the Optimised Retrofit Programme (ORP) launched, a whole-house, fabric-first approach focused on improving social housing. The NEST scheme continued to deliver energy advice and free improvements (like boilers and insulation) to low-income households but was centrally delivered with limited LA involvement [36].

During this time, Welsh policy also started to focus on the multi-scalar dimensions of building and heat decarbonisation, with significant interest in evaluating regional energy differences and how these connected – or could be addressed – through local energy planning. This includes producing a series of analyses focusing on North Wales [37], Mid Wales [38], South West Wales [39], and the Cardiff Capital Region [40]. Here, place is implicit, but there are clear efforts to characterise geographical distinction beyond a national Welsh framing, for example, *"North Wales is defined as the geographic area which comprises the LAs of Isle of Anglesey, Gwynedd, Conwy, Denbighshire, Flintshire and Wrexham"* [37] *(p.40).* Here, each region sets its own strategic energy priorities, for example, with North Wales primarily aiming to "*become a leader in multi-scale low carbon energy generation from small community projects through to large developments*" and an exporter of "*low carbon electricity to other areas*", whilst concomitantly adopting a "*whole-systems multi-vector view*" that "*broadens the focus from solely electricity, power generation and energy efficiency to include heat and transport*" (p. 19). This contrasts with the principles outlined in South West Wales, for example, where greater emphasis is placed on energy efficiency – "*a key priority for the region is to drive down energy demand*" (p.14) through the concept of 'Homes as Power Stations', and the development of Clean-Growth hubs which are underpinned by place-based industrial decarbonisation narratives. The Welsh Government has also funded the development of Local Area Energy Plans for each of the 22 LAs in Wales. These plans aim to produce detailed, costed, spatial plans for decarbonising local energy systems, including buildings, generation and transport. The Welsh Government plans to aggregate the individual LAEPs to form a nationwide energy plan to guide national policy and investments [41].

Overall, in Wales, these changes show a less granular approach to local place-based *delivery per se,* but a greater emphasis on understanding regional distinctiveness and how that should shape local authority delivery. There is more substantive engagement with the multi-scalar dimensions of place emerging within Welsh policy, alongside more concrete interest in coordinating regional and local planning.

3.1.3 A renewed focus on place-based approaches (Labour majority government, 2024-present)

Since a Labour majority government came to power in mid-2024 there has been a significant shift in the role of place-based approaches in building and heat decarbonisation policy. The centrepiece of Labour's approach to existing buildings is the Warm Homes Plan [1], which replaces ECO4 – with ~£15 billion pledged to cut bills through a 'whole house approach' to retrofit, including insulation improvements, solar panels and heat pumps. The Warm Homes Plan consolidates existing schemes – including the Boiler Upgrade Scheme, the Warm Home: Social Housing Fund, and the Warm Homes: Local Grant – under one umbrella scheme. Accordingly, the Government aims to develop an "*offer for all*" so that everyone can improve the energy efficiency of their home. A key change concerns greater emphasis on renewable energy technology deployment on households – such as solar, batteries and heat pumps – compared to fabric-first or whole house approaches [42].

These schemes are supported by wider reforms, including the launch of the Clean Heat Market Mechanism, which obligates boiler manufacturers to sell a specific and proportional number of heat pumps[ix]. This coincides with wider policy measures to rebalance electricity and gas prices[x], aiming to improve the financial attractiveness of heat pumps. The Government has been strengthening minimum energy efficiency standards for rental properties and initiated reforms to the EPC system, including assessing properties on fabric performance, smart readiness, and heating system efficiency rather than cost-based metrics.

Accompanying these changes is a strong discursive shift towards place-based terminology [1] [2] with more granular language, including 'area-based delivery' through upgrading entire neighbourhoods or streets. The Warm Homes Plan [1] sets out a clear Government ambition to utilise "whole place-based solutions", drawing upon case studies from the West Midlands Combined Authority's 'Net Zero Neighbourhood" programme, where place-based approaches are described as:

"…the most effective and equitable way of delivering a clean energy transition. When change is shaped around the needs of our communities, this generates a level of

[ix] Reforms to the CHMM before its launch reduced industry penalties for missed targets from £3,000 to £500 per unit with the initial 25/26 target set at 6% of boiler sales.

[x] Including scrapping ECO and removing the levy from bills from April 26, and removing 75% of the Renewables Obligation costs from electricity bills.

engagement that is essential for attracting the finance we need to build on public sector investment and create greater scale. Partnership working with our LAs, third sector organisations, the private sector and communities can ensure that the benefits of the transition are seen where they are needed most." (p. 86)

Whilst there is a strong narrative commitment to place-based delivery in the Warm Homes Plan, terminology is inconsistently applied. For example, the new Warm Homes Agency is expected to *"have a critical role in **place-based delivery**… to build on good practice in **local delivery**, showcasing excellence… enabling upskilling across all areas… supporting **local partnerships**… build[ing] capacity in local government, to enable delivery to be successfully planned and led at a **local level**" [1] (p. 81),* whilst Local and Mayoral Authorities are expected to *"be critical actors in planning a transition for their local areas" (p. 82).* Similarly, *"**local** Zone Coordination Bodies"* are expected *"[to] help lay the groundwork for a more **place-based approach** to heat"* (p.83), and Distribution Network Operators could have an expanded role to *"coordinate **area-based delivery**" (p.87).* Hence, this discursive inconsistency is matched by the inclusion of more diverse actors in delivering place-based approaches.

In addition, the 'Local Power Plan' [2] demonstrates increased attention on communities and community energy with reference to "*restoring pride*", "*transforming communities*", "*creating local jobs*", and the role of Community Energy projects in "*strengthening [national] energy security*" [2] (pp. 5-6). The Local Power Plan also introduces additional terminology, including "*place-shaping*" – described as joint planning and project development between LAs, CE and the wider community (p.26) – linking this concept to both Smart Local Energy Systems *and* (Smart) Community Energy. Whilst this signals increased attention to community agency, the introduction of additional place-based terminology without a clear definition, or positioning in relation to other terms, adds to the conceptual ambiguity across both documents.

Overall, though the Warm Homes Plan [1] and Local Power Plan [2] place considerable emphasis on devolved, collaborative and place-based approaches to heat and building decarbonisation, they also illustrate a sustained lack of conceptual clarity in how place-based approaches to building and heat decarbonisation are framed and who they are delivered by. The use of multiple terms interchangeably creates uncertainty about the roles and responsibilities of those expected to lead these more granular models of delivery.

To some extent, a similar trend can be seen in Scotland, where the recent 'Green Heat Finance Taskforce: report' [43] identifies significant interest in "*creating new place-based delivery structures, including provision of a support unit and considering the scope to utilise taxation to incentivise clean heat installations*" (p. 10). There remain clear commitments to continuing to fund long-established area-based schemes for targeting fuel poverty and supporting the delivery of the 32 LHEES. Despite this, the report also cites uncertainty about how to scale up place-based models within existing devolved approaches to area-based delivery by LAs, stating that building place-based structures will "*take longer to develop and deliver*" (p. 10), that *"considerable work is required… to create place-based blended finance*

structures that combine both public and private financing provision across a multi-year cycle" and that any *"new place-based support structures"* need to compliment *"existing delivery schemes…to ensure they act to stimulate rather than constrain project development by creating certainty and avoiding confusion amongst LAs and others coordinating place-based project delivery"* (p. 17).

In Wales, since 2024, a number of programmes have been extended or launched to provide a comprehensive offer for households. The ORP continues to deliver 'whole house' improvements to social housing, the NEST programme targets fuel poor households and the new Green Homes Wales programme offers interest-free loans and advice to private homeowners [44]. While the ORP is delivered with LAs and Registered Social Landlords (RSLs) there is limited place-based coordination of either NEST or the Green Homes Wales Programme. The Welsh Government's Ynni Cymru initiative also funded a range of locally, and community owned 'smart local energy systems' projects in 2024 [45], although these tended to focus on generation, system optimisation and flexibility rather than retrofit (ref). Despite this limited focus on place-based delivery of retrofit, the 'Heat Strategy for Wales' [45] indicates a renewed focus on the role of Local Area Action Plans (LAEPs) in enabling a "*place-based approach to the low carbon heat transition*" (p. 73). There are some similarities to the governance changes in the Warm Homes Plan [1], including coordinating LAEPs with District Network Operator priorities, though less responsibility for coordination is placed on District Network Operators. Instead, emphasis is placed on aligning regional energy plans with LAEPs, working from the most granular level towards regional strategies and a wider 'whole Wales' approach.

3.2 Non-governmental organisation document review

In this section, we review how NGO perspectives on place-based approaches to building and heat decarbonisation have concomitantly developed from 2010 to 2026. Many of the themes identified below are interconnected, with different aspects of building and heat decarbonisation being more or less prominent across publications according to the remit of different organisations. Hence, these themes – and citations of publications – should not be considered exclusive, but rather illustrative of these thematic changes. Throughout this section, we make comparisons to the key findings in section 3.1, identifying differences and similarities where applicable.

Overall, there is a clear and progressive trend of critiquing the effectiveness of national and spatially-agnostic approaches throughout the NGO publications [46] [47] [48] [49] [50]. This is reflective of a perceived longstanding 'national-local' gap in delivery, where spatially-agnostic national government policies and actors are disconnected from the context specific needs of a population [51]. Such criticisms are primarily centred around different iterations of ECO. In particular, many question the suitability of profit-driven – but spatially agnostic – energy companies to address building and heat decarbonisation and social policy goals, such as fuel poverty. For example, between ECO1 and ECO2, successful lobbying by energy companies resulted in reforms lowering their obligation to deliver higher cost – but more

effective – measures [52], reflecting a focus on cost rather than equity. Otherwise, target-driven models, arm's length outsourcing and lack of accountability and oversight all made it difficult to ensure quality of retrofit, and sufficient geographic coverage to address fuel poverty in low-income areas [53]. Many NGOs note that more spatially-oriented actors – such as LAs – are positioned as intermediaries that can facilitate connections between the private sector, supply chains and central government, rather than leaders in building and heat decarbonisation [51]. There are three significant critiques of building and heat decarbonisation policy to date.

3.2.1 Holistic perspectives on places

Over the last five years, a number of non-governmental organisations have sought to challenge more linear conceptualisations of place-based policy, which focus on utilising place-based approaches to deliver building and heat decarbonisation without adopting a meaningful place-based lens. Publications by The Young Foundation [54], National Retrofit Hub [3] and the Centre for Local Economic Strategies (CLES) [55] have promoted more holistic and critical understandings of place, which foreground lived experience, social complexity and community agency rather than treating localities as administrative units to which retrofit programmes are simply applied.

These holistic conceptualisations align more closely with academic theorisations; which tend to view places not as fixed geographic containers but as complex, ever-changing assemblages of lived experiences, histories, social networks and spatial characteristics [3] [54]. From this perspective, places are not simply bounded areas on a map to which decarbonisation agendas are ascribed, but dynamic contexts within which individuals differentially experience – and navigate – a variety of opportunities and challenges in their day-to-day lives (Ibid). The implications for policy are significant: if place is understood in this richer sense, effective place-based approaches cannot be designed around purely geographical criteria but must engage with the social and relational dimensions of communities.

In particular, NGO publications engage more substantively with ideas about social (in)justices and the capacity to achieve a 'just transition' through market-led approaches. Such publications often focus on improving the capacity for underrepresented actors to participate in energy-related decision-making, particularly local residents and community groups (outside of Community Energy Groups). Here, the emphasis is on developing innovative methodologies to enable participation, for example, through utilising 'community assemblies' [54]. These different participatory mechanisms (defined in Table 2 below) reflect a strong push to move beyond tokenistic community engagement practices which are typically conducted to increase the uptake (or 'acceptance') of interventions, and are short-term, disruptive and extractive. Instead, greater emphasis is placed on ensuring participation is impactful in the long-term – not simply addressing the specific needs and challenges of a community – but equipping those actors with the tools to mitigate issues themselves over time. This is often synonymous with ideas of community wealth

building and transferring power to community actors [55], which strive to improve the circulation and flow of wealth to local residents, and recognise the wider health and economic benefits of building decarbonisation [56].

These holistic conceptual underpinnings are clearly demonstrated with the development of several novel frameworks (Figure 3). In 'Our Journey To Net Zero' (2024) [54], The Young Foundation develop a 'person-centred and place-based framework' (left, figure 3) to enable LAs to "*plan for and manage a just transition…[and] build inclusive, fair participation*" (p. 5). They are similarly reflected in the 'Understanding Place-based Retrofit' publication (right, figure 3) by the National Retrofit Hub [3], or in 'Our Places, Our Planet' by CLES [55].

This more holistic perspective on place has two key implications for delivery. First, it necessitates that building and heat decarbonisation projects generate a 'deep' understanding of place [3]. This means capturing the experiential and more granular 'local knowledge' that residents have of their local communities and embedding this into decision-making alongside technical and specialist retrofit assessments. Second, capturing such data must not be extractive, but founded upon trusted and reciprocal partnerships and facilitating "*meaningful community involvement*" with a diverse range of local actors – including citizens, community groups, supply chains and LAs. Such partnerships serve as a foundation to enable long-lasting processes of community wealth building [55]. One valuable approach includes the use of Community Impact Health Assessments (CIHA) to explore the experiences of living in houses before and after interventions. CIHA are community-led and lived experience documents that show the real impacts of household interventions; a qualitative richness that is lost in retrofit data. They "*illuminate not only the physical condition of the housing stock, but also the relational systems that shape outcomes, including landlord decision-making, overcrowding, informal care networks, community activity, and everyday household routines*" [3] (p. 17).

Overall, NGO perspectives highlight that transitioning towards more multi-scalar and collaborative scales of governance must not undermine or exclude those whom such interventions will affect. As evidenced in section 3.1, community actors have experienced an 'ebb and flow' of inclusion and capacity to participate over the last 16 years. Therefore, NGO perspectives are invaluable in helping to move beyond such challenges.

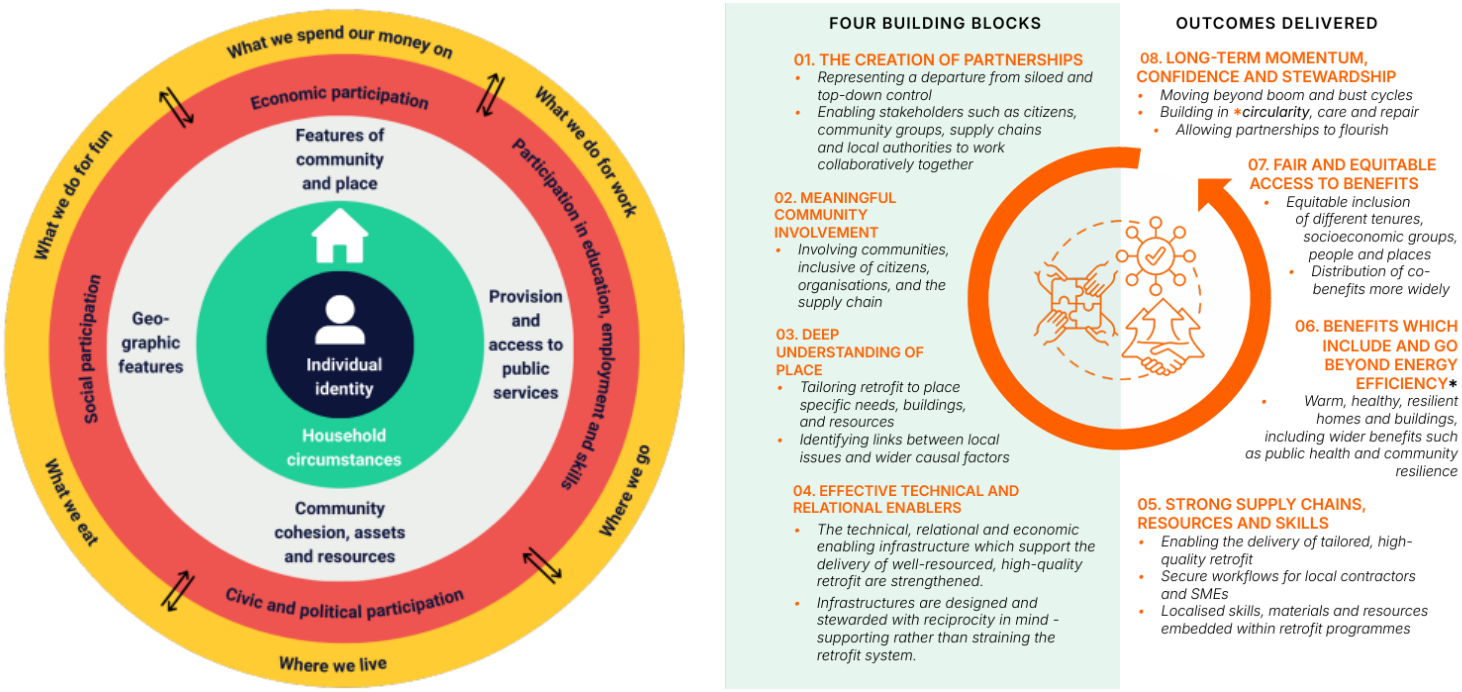

Figure 3: Examples of more holistic perspectives on place by The Young Foundation (left) [54] and the National Retrofit Hub (right) [3]

3.2.2 Scale, devolution, roles and responsibilities

A recurring theme throughout the NGO publications related to tensions between 'horizontal' and 'vertical' governance approaches: which incumbent organisations, at which scale, are most effective to deliver building and heat decarbonisation? Historically, the UK government has favoured vertical scales of governance (national-local), which aim to create clear, hierarchical levels of responsibility. However, as shown in section 3.1, prioritisation of the market sector through ECO generated a 'fuzziness' of accountability, which undermined and stifled local responsiveness. By consequence, academic research has identified a 'governance gap' between regional and local planning [57], and non-governmental organisations have articulated the need for more multi-scalar and spatially-driven perspectives towards building and heat decarbonisation [58] [51], recognising the tensions between different horizontal and vertical governance.

Horizontally, there are regional and intra-regional geographic disparities which significantly shape both the costs and potential impact of building and heat decarbonisation interventions. Despite informal networking through organisations such as UK100, LAs remain largely disconnected from one another, a fragmentation that is compounded by significant regional variations in the challenges they face. For example, housing stock quality and retrofit costs vary widely, with Localis [59] estimating that retrofit costs in the North Midlands are ~15% of a property value

compared to just ~2% in many Southern regions. Sub-regional combined authorities have been proposed as a key mechanism to address this fragmentation and improve coordination between local authorities, whilst maintaining a focus on regional disparities (section 3.2.2.2). However, their insertion into the governance landscape does not simply resolve horizontal disconnections, it also reshapes vertical accountability, raising questions about how far responsibility for decarbonisation should be devolved from central government, what those roles should be, and for whom. Additionally, Mayoral Combined Authorities do not exist consistently across GB, they are primarily a feature of English local government, but many regions in England remain without this tier of governance[xi]. Different regional bodies also exist in Wales (Corporate Joint Committee structuring regional investment) and Scotland (City Region and Growth Deals). Joining up these multi-scalar structures and enabling them to work collaboratively represents a significant challenge.

3.2.2.1 Local authority roles

Earlier publications in the corpus (circa 2015) position LAs as important intermediaries – able to coordinate community energy groups, the private sector and national government. However, this framing is not uniform with some documents, particularly from right-leaning thinktanks such as Policy Connect employing conditional language, e.g., "*there **may** be an argument to be made in favour of LAs being given the powers and resources*" [59] (Emphasis added). This indicates some ambivalence about LA leadership rather than confident endorsement of it, and closely mirrors the retractions made by central government (section 3.1.2).

Notwithstanding this, the majority of NGO publications argue that local authorities should take a leading role in building and heat decarbonisation, with partnership and intermediary functions positioned as complementary to, rather than substitutes to, LA leadership (see Figure 4) [55] [60] [61]. Five principal arguments are advanced in support of this position.

First, organisations such as UK100, IPPR and CLES have long contended that LAs are pre-existing 'place-leaders' [60] and 'place-shapers' [61]; actors that already have granular 'deep' understandings of place (section 3.2.1), are attuned to local opportunities and challenges, and routinely make decisions across planning, service delivery and economic investment which shape how residents experience their local area. This makes them better equipped than national or private actors to design area-based schemes and integrate building and heat decarbonisation programmes within wider decarbonisation agendas [62].

Second, many LAs own social housing or work closely with social housing providers and charities, which provide direct routes to engage with low income or fuel poor groups [63]. This can help improve the targeting fuel poor households within area-based programmes, a contrast to the arm's length, data-driven approach taken by

[xi] Local government in England also is currently undergoing significant restructuring with all LAs expected to become unitary by 2027/28, see https://www.local.gov.uk/topics/devolution/devolution-hub/local-government-reorganisation-lgr.

Arbed in Wales [64]. Third, relatedly, LAs are comparatively trusted organisations within their localities [65], supporting "*community engagement in place-based climate programmes*" and allowing communities to support "*local authority-led deliberative processes*" (p. 5) [51] (see also section 3.2.2.3), although trust of LAs is not universal and varies across GB [66] Fourth, as 'consistent clients', LAs can help "*pump prime*" local supply chains, build market confidence and attract private sector investment (see section 3.3). In particular, area-based approaches are framed as helping to secure local market confidence by creating economies of scale [65]. Collectively, this could help ensure community wealth building, whilst concurrently contributing to the growth of a national low carbon economy and creating green jobs.

Finally, LAs and their partners are well-positioned to host or coordinate energy advice services and one-stop shops, providing residents with accessible, locally tailored guidance on retrofit options, financing, and available support schemes. At a local level, such services can be embedded within existing LA services — such as libraries, housing offices, or citizen advice partnerships — lowering barriers to engagement for hard-to-reach groups. At a national level, there have been calls for a more coordinated advice infrastructure to complement area-based delivery, ensuring that households not captured by geographically targeted programmes can still access consistent and trustworthy information [68]. By bridging the gap between national policy frameworks and individual householder decision-making, energy advice services represent a further area in which LAs can add value as trusted local intermediaries.

Overall, as shown in Figure 4, LAs are promoted as central actors in the design and delivery of holistic and increasingly granular (e.g., area-based, neighbourhood [69]) place-based approaches to building decarbonisation by NGO organisations. Yet, despite these potential advantages, many LAs remain "*hamstrung by a lack of a defined role, a policy and strategy ecosystem that fails to enable and support local delivery, conflicting remits of public agencies and insufficient funding and resources*" [51] (p. 4). Many of the non-governmental publications focus on campaigning for greater devolution of responsibilities to LAs, however, they also offer limited reflection on the boundaries of LA capabilities, with community engagement activities often framed as "*local authority-led*" rather than genuinely co-created with residents or resident-led (see sections 3.1. and 3.2.2.3).

It is also important to note that Las' commitment to climate and energy priorities vary considerably across the country. NGO reports that advocated for LA-led approaches tended to give limited recognition to the geographical variation in access to retrofit that could result from programmes being dependent on LAs choosing to lead them. Both the 2025 and 2026 Local Elections resulted in the climate-sceptic Reform party winning hundreds of seats, and majorities in several councils. Evidence from the 2025-elected Reform-led councils shows that most have scrapped emissions targets and climate commitments, though in some cases broader net zero plans have been replaced with 'Energy Efficiency' plans and commitments to retrofit activity remains [70].

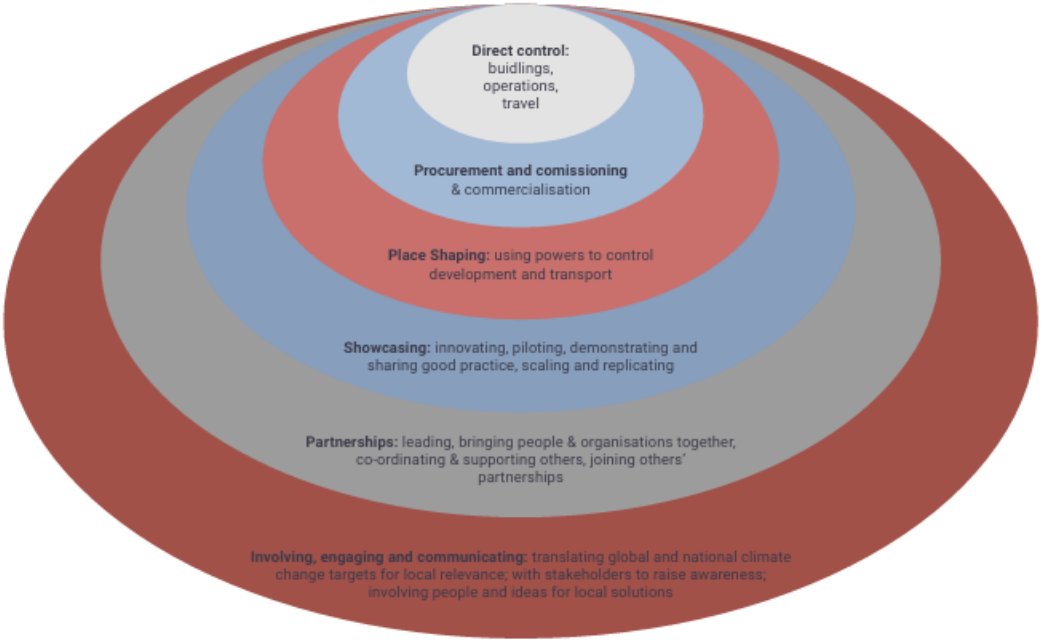

Figure 4: The roles played by LAs in delivering Net Zero policies [56].

3.2.2.2 Sub-regional authorities

An increasing number of NGO publications recognise that sub-regional structures, such as Mayoral Combined Authorities (MCAs), are emerging as important actors in building and heat decarbonisation policy. MCAs are reflective of an ongoing 'patchwork' of devolving responsibility from the state, situated around functional economic geographies. The creation of such structures recognises the historically centralised nature of political governance in the UK and the role of devolution in tackling regional disparities.

There has been particular focus on the role of MCAs following the establishment of two 'trailblazer' building and heat decarbonisation pilots within the Greater Manchester Combined Authority (GMCA) [71] and West Midlands Combined Authority (WMCA) [72] in 2023**.** Both have developed whole-systems Regional Energy Strategies which are approved by constituent LAs, ensuring that building and heat decarbonisation objectives are targeted to the specific needs of the region.

Both MCAs benefit from direct devolved funding from the government and greater flexibility over spending, including exploring blended finance options; aiming to combine with private sector investment with building and heat decarbonisation objectives (see section 4.3). There is strong evidence that both MCAs are increasingly important actors in coordinating local projects, creating a critical mass of demand across LAs, supporting private sector confidence. This can help avoid capital growth from supply chains 'leaking out' of those regions [74] but also help

coordinate interventions between different social housing providers across multiple LAs.

MCAs also have an emerging role in coordinating more innovative, granular approaches to building and heat decarbonisation. For example, the WMCA trailblazer has adopted a holistic approach towards place-based schemes (see section 3.1), with the Department for Energy Security and Net Zero funded Local Net Zero Accelerator programme focusing on the interconnections between building decarbonisation, low-carbon transport, green spaces and green skills, and at granular ('neighbourhood') scales [69] [75]**.** Moreover, WMCA is exploring innovative trials for data accumulation and sharing spatial intelligence. Through the PRIDE project, the WMCA uses the LAEP+ digital tool to create a shared spatial intelligence base derived from, and shared across, all seven constituent LAs. This includes data on energy demand, network capacity, fuel poverty, heat network zones, and the suitability of other forms of renewable energy technology. Hence, this regional data sharing is informed directly by place-based observations, but enables responsible actors to deliver energy system transformation beyond geographical siloes.

3.2.2.3 Hyper-local actors: communities, community groups and residents

A recurrent theme within NGO documents pertains to the role of community networks in the delivery of building and heat decarbonisation policy [76]. These community actors and networks are not restricted to Community Energy groups, but also include other formal and informal social networks, such as faith groups, schools, local charities, volunteers, local businesses and wider social interactions [77]. The Young Foundation [54] identified how both online – including online forums such as Facebook or WhatsApp groups between relatives and friends – and offline in-person or 'across the garden fence' interactions – also play an important role. Overall, area-based models of delivery have been shown to greatly benefit from utilising participatory mechanisms which leverage relational ties to build trust and personal connection [54]**.**

However, one of the most pertinent discussions within the NGO publications concerns the extent to which community groups are empowered [77]**.** Academic literature has long contended that citizen participation in decision-making is directly related to the transfer of power. Arnstein [78] provides a well-cited typology to examine this (Figure 5), which includes forms of non-participation (that focus on enabling 'powerholders' to achieve their aims), degrees of tokenism (forms of participation that enable citizen views to be heard, but which offer no assurance that views will actually be impactful), to genuine delegated power and control. Synthesising the NGO publications, there is a strong consensus that participation in building and heat decarbonisation should move beyond tokenism, yet there is less consensus about how much further up the ladder that empowerment can and should go.

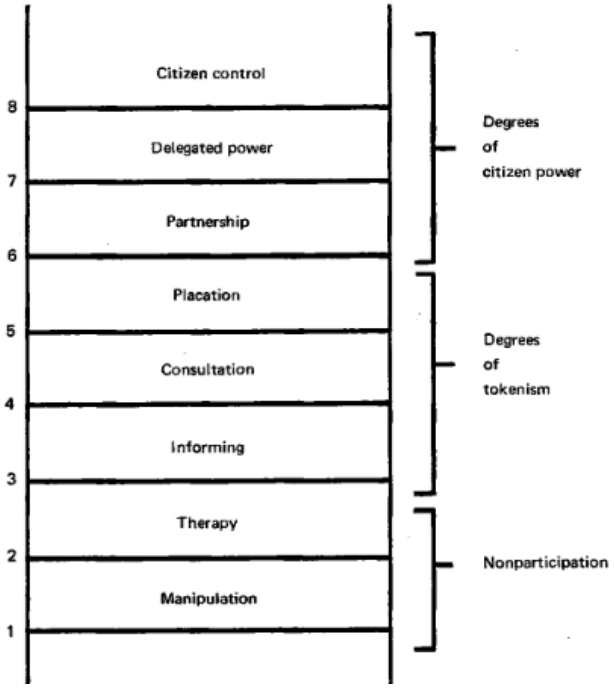

Figure 5: The eight rungs of citizen participation [78]

On the one hand, partnerships between LAs and community groups have been shown to be highly effective. E3G [79] identify how such partnerships have allowed residents to feed into the design and implementation of area-based schemes, to promote funding opportunities, and to collect innovative forms of data. The Young Foundation similarly emphasises how informal community networks have been found to be critical in shaping agency-building, but also determining willingness to trust and participate in net zero transitions [54]. Some NGO publications focus on delegating power and control; enabling community groups to lead on place-based building and heat decarbonisation. As noted by the Young Foundation and Institute for Community Studies [80], both community energy groups and funded community organisations can have a substantive impact in driving decarbonisation agendas. They cite how the Bradford Big Local group have helped raise awareness for energy efficiency schemes, but also supported citizens to access and navigate often complex application processes to access government grants – bypassing dependency on LAs.

Regardless of the depth of participation established, there are also important geographical dimensions to consider. E3G identify the need for sensitivity to the place-based distinctiveness of social networks, recognising that community groups are not homogenous and the capacity for participation – and relative effectiveness of an approach – can vary depending on housing archetypes, distances between homes, and rural-urban differences [79]. As an example, they [79] identify that targeted letter-based outreach schemes coordinated by East Lindsey, South Holland and Boston Councils in consortia worked effectively to engage residents in area-based schemes within more rural settings, but that establishing a community-based hub to improve social cohesion worked better for Leeds City Council within more

urban areas. Hence, thinking in holistic, place-based ways can help to determine which engagement or participatory mechanisms in area-based schemes might be successful (see also [3]), and where appetite for different degrees of empowerment might exist.

Overall, this debate mirrors the fluctuation in how community actors have been valued in building and heat decarbonisation schemes by the UK government over time (see section 3.1).

3.2.2.4 Multi-scalar governance of building and heat decarbonisation

The themes presented in this section reflect a common call across NGO literature for more multi-scalar perspectives on the governance of building and heat decarbonisation. This means not only clarifying the differential roles and responsibilities of actors and organisations within localities, but also focusing on the interconnections 'between' scales of governance, such as the need for 'intermediaries' which can negotiate and coordinate across both horizontal and vertical scales [81] of governance [51] [59] [60].

However, moving towards more multi-scalar governance also introduces new complexities. For example, CAs face multiple challenges. Many CAs have reported uncertainty regarding long-term funding (i.e., beyond 'snapshot' trailblazer innovation funding), most of which has been spent on building tools and understanding of how to deliver place-based policy [60]. This makes it difficult to plan long-term delivery programmes with LAs, which could inhibit the willingness of communities to engage in processes of co-creation. Second, there are questions about the potential to replicate trailblazer pilots. Both the WMCA and GMCA have long-established and mature histories of collaborative governance, reflective of the longstanding spatial selectivity of the state [82] [83]. However, this is less evident in other places, particularly those without existing formal combined authority structures. This raises important questions about the disadvantages for the 'in-between spaces' of CAs – the LAs not within CA jurisdictions - who would not receive the same benefits.

There are also important considerations concerning increasing the reliance on the role of community actors. First, there are social justice implications about relying on 'free labour' to enact decarbonisation schemes, particularly as we progress towards a blended finance model (section 4.3) which benefits the private sector. Such approaches would require clear stipulation about how community wealth building is factored into relationships, and how communities' benefit from participation outside of bill reduction. Second, there are assumptions that all places necessarily have robust social networks that can be harnessed. As The Young Foundation note: "*Places with less social and community infrastructure result in families and communities having less social interaction and poor access to public services that might otherwise help them build knowledge, access resources and tools, and manage trade-offs during the transition to net zero*" [54] (p. 35). As such, they call for a wider 'index of place readiness' to assess the capabilities of local people and places to engage in low carbon programmes.

3.3 Funding building and heat decarbonisation

3.3.1 Long-term, streamlined approach

One of the clearest themes across the non-governmental documents is the need for financial stability in funding building and heat decarbonisation. Decades of complex, rapidly changing policy initiatives have resulted in a supply chain and installer network that is fragile and distrustful of government policy. Before 2013, the Energy Efficiency Commitment placed legal obligations on energy suppliers to fund energy efficiency improvements, which primarily targeted fabric improvements. This was superseded by two funding schemes. First, the Green Deal aimed to address the retrofit needs of 14 million homes, combining fabric improvement (insulation and double glazing) with heat pumps. However, with low sign up from households, the deal was eventually scrapped. There was low interest in the loans, rather than grants, structure of the Green Deal, with repayments often exceeding the return on energy savings. Second, ECO placed legal obligations on large energy suppliers to deliver energy efficiency measures to low income and fuel poor households. Ultimately, much of the costs were passed to consumers through bills. Covid-19 recovery and the later energy crises from the war in Ukraine have made funding energy efficiency improvements a more pertinent policy focus. In 2023, the Boiler Upgrade Scheme saw an additional £1.5 billion investment (extending the scheme to 2028), and with grant values for heat pumps increased to £7,500.

Overall, much of the policy during this era was scrutinised by non-governmental organisations for poor planning, significant retrenchments in centralised funding for low carbon heating, and an array of poor delivery mechanisms [53] [84]**.** For example, Citizen's Advice [53] cite concerns pertaining to a lack of regulation and oversight for an existing ~500,000 homes on heat networks, including billing errors, difficulty for consumers understanding standing charges, and a lack of information and advice. They also identify how, despite the Renewable Heat Incentive, take-up for heat pumps has been poor, in part attributed to a complex sign up process [84]**.**

Many of these criticisms have – at least discursively – been addressed by proposed reforms from the current Labour government. The Warm Homes Plan (WHP) – replacing ECO – introduces new support for clean technologies, whilst integrated existing schemes into one comprehensive and non-competitive funding pot. The WHP expects a total investment of £38 billion in grants to be invested over this parliament. Initially, funding will be devolved directly to local authorities – the Warm Homes: Local Grant – and social housing providers – the Warm Homes: Social Housing Fund, before these schemes become merged in 27/28. Moreover, the Warm Homes Fund offers £5 billion in zero or low interest consumer finance to help consumers who do not qualify for grants to upgrade their homes with solar panels, heat pumps and batteries. Private landlords are also expected to invest in ensuring properties are EPC C by 2030, with a price cap of £10,000 per property.

Non-governmental organisations have broadly been supportive of such funding reforms, including more direct funding towards LAs [85], a renewed emphasis on fuel

poverty [86], potentially greater coordination through the establishment of a Warm Homes Agency to oversee funding allocation, and the greater emphasis on area-based delivery (though see [87]).

Despite these developments, several criticisms persist. First, there is a considerably greater focus in the WHP on funding home energy technologies rather than fabric interventions, which risks potential savings for consumers being lost by poor building efficiency [41]. Second, there has been little development on rebalancing electricity-to-gas price ratios (~4.1%). This means the operational costs of heat pumps remain close to those of boilers, significantly reducing the potential savings associated with low carbon heating systems and reducing the incentive for able-to-pay households – through self-referrals – to switch [86]. Third, despite narrative commitment, funding has been scaled back (from £6 billion to £5.5 billion) in capital grants from the initial amount pledged [87]. Fourth, the shift towards area-based schemes can risk excluding eligible people based on where they live. The Resolution Foundation emphasises the need for grant funding to be targeted using incomes and assets instead of postcode eligibility [86] [87]. Finally, the use of loans-based systems could disproportionately improve the well-being of rich individuals, who are 70% more likely to take up loans and support schemes. The Resolution Foundation note that this is one reason why there are twice as many solar panels on homes in richer areas than in poorer places.

3.3.2 The potential of blended finance

Whilst the WHP represents a significant funding commitment for retrofit and heat decarbonisation, it is clear that additional financing will be required to scale up deployment sufficiently to meet carbon and social objectives. Additionally, place-based approaches tend to be predicated on offering support to all householders in a locality, recognising that not all will be eligible for grants aimed at low-income groups.

One of the major developments within the WHP is emphasis on blended finance models, which involve using public money (grants, guarantees or concessional loans) to de-risk or subsidise returns on private investment. The Warm Homes Fund is a government-led blended finance vehicle, using £1.7 billion of consumer loans and £300 million of capital investment to attract private capital to fill a £3.3 billion deficit. However, significant uncertainties remain pertaining to how the Warm Homes Fund will operate, and the government is consulting on innovative financing for retrofit and heat decarbonisation [88].

Successful blended finance schemes are largely dependent on area-based targeting, where bundling hundreds or thousands of retrofit schemes can incentivise private sector investment by creating large, coherent and well-governed programmes that have predictable timelines and outcomes. One of the most recent and ambitious examples is being explored within the WMCA trailblazer – Net Zero Neighbourhoods (NZN) [89].

NZN offer a clear geographic area – the neighbourhood – as a unit of investment, making a more appealing investment portfolio for external investors and creating economies of scale by reducing significant outlay costs, such as for scaffolding [90]. Moreover, NZN are governed by LAs, ensuring clear accountability for works, further de-risking investments. NZN has a unique finance structure, using public grants as a foundation to absorb the least commercially viable properties – such as low income or fuel poor households. The National Wealth Fund then guarantees a portion of private loans at below-market rates, making this proposition more attractive. Private capital – either pension funds, insurers or infrastructure funds – is then used to provide the bulk of the capital, accepting a lower return due to the risk absorption from public funding. Various potential revenue streams can be utilised, including energy bill savings shared with investors through long-term contracts, "*energy as a service*" models (monthly repayments on a tariff system rather than buying technologies outright) [69] [75]. Energy as a service has been particularly successful in the Netherlands, through the Energiesprong model, where residents get more energy efficient and warmer homes for no upfront cost, but a third party owns the asset and sells heat to residents at a fixed price over a long term.

Nonetheless, significant concerns have been raised about the limitations of blended finance for the most fuel poor households. Critics argue that directing grant funding towards the development of blended finance schemes risks diverting resources away from those who need them most — particularly households unable to take on debt or service loan repayments regardless of favourable terms [87]. While the NZN concept attempts to account for this tension by incorporating targeted grant provision, other blended finance approaches may not adequately address this risk, and careful consideration is needed to ensure that market-facing financing mechanisms do not systematically exclude the most vulnerable from area-based retrofit programmes.

4. Recommendations

In this section, we draw upon the key findings presented in section 3 and synthesise seven key recommendations for the newly established Warm Homes Agency.

4.1 Adopt holistic approaches to places, with greater precision in the use of place-based terminology

Our analysis shows that numerous place-based terms are employed in building and heat decarbonisation policy documents, but with limited specificity. To support conceptual clarity, we offer definitions of the main terms in Table 1. First, the term "place-based" is often used interchangeably with area-based and local, despite the term 'place' having a conceptually deeper meaning (section 4.2.1). Place is a lens through which the specific contextual factors (e.g., environmental, economic, social), shared meanings and lived experience are brought to the fore. Area-based refers to specific delivery models which define and target 'intra-local' specific geographies – incorporating 'neighbourhood', and 'street-by-street' approaches. Hence, place-based approaches will utilise area-based targeting and delivery, and the granularity to which they are applied reflects how robustly a place-based approach is employed. 'Local' should be reserved to reference to the 'local authority' scale of governance. Defining 'local' primarily as local government-led reflects the broader trajectory of English devolution and the ongoing shift of power away from Whitehall. However, this framing also risks obscuring the significant variation in local authority capacity across the country, and the real constraints that many councils face in planning and delivering retrofit programmes.

Additionally, analysis indicated that community engagement and community-led approaches to building and heat decarbonisation are often conflated. A distinction is important, with the two approaches likely offering different social and equity impacts. Specifically, community-led approaches are distinctive models within place-based approaches, with emphasis on empowering community actors in a specific place to lead on building and heat decarbonisation, (co)design and deliver the work; not simply a process of engagement to increase the uptake of retrofit interventions.

Finally, there is evidence that technocratic place-based approaches to building and heat decarbonisation endure within some non-governmental literature, particularly by organisations working closely with the government and industry. For example, the recent 'Building Fair Futures: A look at social housing decarbonisation funding' [67] report by Energy Systems Catapult conflates "*locally-led*", "*place-based*" and "*local, area-based*" approaches to retrofit, in common with a number of similar publications (see [91]). The report also frames community engagement as a process concerned with "*accelerating the transition*" rather than a process that should take place to ensure a democratic and socially-just transition.

Overall, this points to the importance of establishing a mutually agreed and government-endorsed terminological basis for place-based policy and delivery. One that draws on the conceptual and practical developments – or 'good practice' – emerging from non-governmental actors and organisations. It also requires clarifying how adjacent terminology, such as place-shaping, relates to existing dominant terminology.

4.2 Be explicit about what a place-based approach entails

There has been considerable recent policy interest in the role of place-based approaches to retrofit and heat decarbonisation, but persistent lack of clarity on what that means in practice. Our analysis suggests that place-based policy delivery operates along a spectrum, with varying levels of expectation and responsibility placed on existing local actors and the roles they are asked to perform.

At one end, it can mean little more than a local authority administering a national grant on behalf of government. Historically the dominant model the UK has largely relied on demand-led, household-by-household national schemes (like the Boiler Upgrade Scheme or ECO) where central government sets eligibility rules and households or installers self-select into schemes. That model, although simple to scale, tends to favour motivated, higher-income, owner-occupier households who can navigate bureaucracy, and produces patchy, uncoordinated uptake that makes supply chain development difficult. Increasingly schemes supporting those in fuel poverty have been delivered via LAs, often through competitive bidding for funds.

At the other end, place-based schemes can mean designing a locally bespoke programme informed by the complex social interactions that influence energy practices and engagement in a locality (at local and more-than-local scales). This can incorporate citizen co-design, locally-led strategic planning and coordination of programmes and infrastructure, building local skills and supply chains, and structuring programmes, advice and support around the real lives of diverse local communities. It can also include citizen-led delivery which empowers local citizens to take charge of energy efficiency and heat decarbonisation measures. Much of the current policy debate in the UK is about how far along that spectrum ambition and funding can actually reach, so it is important to clearly and define those boundaries.

Overall, our analyses suggest that effective delivery of a place-based approach to building and heat decarbonisation requires a combination of the factors in Table 2: spatial targeting, clear governance, aligned goals and finance. The creation of a Warm Homes Agency provides the government with an opportunity to be specific about what place-based approaches actually mean. This does not mean restricting the autonomy or capacity of sub-regional actors, but rather, providing a framework which helps upskill actors on what place-based thinking means and how it differs from existing approaches. The Warm Homes Agency can also facilitate evidence sharing and learning across areas, building on the wide range of case studies that already exist, including Kirklees Warm Zone, GMCA Your Home Better, WMCA Net

Zero Neighbourhoods, Loco Home Retrofit Glasgow, YorEnergy and Cosy Homes Oxfordshire. Each can offer extensive learning on place-based retrofit models, challenges and opportunities. The WHA should consolidate and share those lessons across sectors, creating an accessible database of good practice

Spatial targeting	**Aggregating demand geographically through area-based approaches:** Instead of a homeowner independently deciding to improve their home and navigating grants alone, a place-based approach groups many properties in the same area together. This allows advice and support to be coordinated in a specific area, lets contractors mobilise efficiently (doing 50 houses on one street rather than 50 houses scattered across a county), and reduces costs through bulk procurement.
	Focusing on the granularity of places: Avoiding generalising the conditions in specific areas, instead focusing on the intra-local similarities and/or distinctions in the challenges and opportunities faced by clusters of households, streets, and neighbourhoods.
	Targeted community engagement: Rather than generic national communications, local trusted organisations — councils, housing associations, GPs, community groups — engage directly with residents and integrate community views into scheme delivery. This can better reach fuel-poor households who often do not engage with centralised grant schemes.
	Integrating retrofit with local infrastructure decisions: Planning decarbonisation (including heat networks, grid upgrades, and building fabric improvements) in an integrated, place-based way can allow more coordinated decision-making and sequencing of improvement. For example, areas identified for a heat network in the future might be prioritised for insulation measures but not heat pump installations or grid upgrades.
	Place-specific housing stock challenges: Different places have very different housing types, tenures, and construction eras. A former mining village in South Wales, a Victorian terraced street in Manchester, and a rural dispersed settlement in the Highlands each need different solutions.
Governance	**A local coordinating body taking the lead:** Usually a local authority, combined authority, or housing association acts as the organising entity — identifying which properties need what, sequencing the work, procuring contractors, and managing quality. This can support high quality local installations and reduce costs.
	Community-led planning and delivery: Community organisations, including faith groups, charities and community energy organisations, often have a deep understanding of local needs and solutions. Supporting communities to lead and shape retrofit in their area can ensure programmes reflects the wants of the local population, support uptake, promote community wealth building and ensure effective targeting.
	Creating robust and coordinated multi-scalar actor networks: Ensuring that actors from the hyper-local to regional scales are communicating effectively and that planning and proposed interventions align across scales (see 3.3.2.).
Goals	**Creating holistic visions of place-based decarbonisation:** Integrating building and heat decarbonisation with other decarbonisation agendas (e.g., transport), health, socio-economic and experiential considerations, to ensure longevity in terms of quality of life for communities.
	Focusing on long-term community wealth building: Empowering local communities to independently address local issues, including poverty alleviation, either through Community Energy pathways or other viable approaches.
	Recognising and valuing local co-benefits: Recognising, measuring and valuing the diverse (financial and non-financial) benefits of retrofit and heat decarbonisation and incorporating into financing and evaluation frameworks.
Finance	**Ensuring that grants do not exclude individuals based on their location**: making sure that government grants target the most vulnerable first, and those economies of scale are built around these households rather than excluding them.
	Utilising local authority-led blended finance: Using government grants to de-risk investments and achieve economies of scale.
	Focusing on the vulnerable first: Ensuring that grant schemes are not immediately redirected towards boosting private sector growth and specifically assist the most vulnerable first.

Table 2: Key place-based delivery dimensions emerging from non-governmental organisations.

4.3 Clarify the roles and responsibilities of actors

Across the documents reviewed, there is consensus that delivering building and heat decarbonisation through more granular approaches has multiple benefits, but that governance remains a multi-scalar challenge.

There is a distinct need to clarify the roles and responsibilities of actors and organisations at different scales, including who is expected to lead on various aspects of place-based decarbonisation (e.g., planning, engagement and participation, oversight, quality assurance, funding allocation). Our analysis demonstrates concerns about the capacity of LAs – particularly those outside of 'trailblazer' mayoral combined authorities – to deliver on retrofit schemes after decades of austerity. Moreover, there is a need to focus on how to improve the *interconnections* between sub-national governance actors [92]. This means improving the communicative channels between sub-regional, local and community structures.

It is important that national governments set clear expectations surrounding roles and responsibilities, particularly as there is a risk that building and heat decarbonisation becomes fragmented across more granular approaches to delivery. Clarifying these expectations will help the Warm Homes Agency to define its organisational structure and remit, to facilitate knowledge exchange and good practice. In particular, the Warm Homes Agency could play a vital role in facilitating knowledge exchange both vertically (between scales) and horizontally (across different LAs and CAs). The Agency should also be tasked with identifying and understanding any risks from place-based approaches, such as inconsistent approaches to delivery across geographic areas or the fragmentation of governance and scheme oversight.

Based upon more recent publications [51] [58] [60], we clarify some key actor roles and responsibilities in Table 3. Other actors may also play important roles, such as DNOs and financing organisations and their roles should be clearly defined.

Actor:	Definition of actor:	Potential roles and responsibilities:
Local resident(s)	An individual or group of /individuals (e.g., a family) who live in a specific geographic area. Includes a diverse range of individuals, including those in social/ council housing, those who experience fuel poverty, and those who are 'able to pay' or early adopters.	• **Co-creating understandings of place:** Helping generate "deep" and context-specific insights into decision-making, drawing upon lived experiences and integration in social networks. • **Facilitating engagement:** Helping to spread the word about place-based approaches to building and heat decarbonisation through social media engagement (e.g., sharing posts), word of mouth with friends, colleagues and relatives, • **Democracy and participation:** Attending local citizens assemblies, and other participatory approaches, to ensure democratic decision-making within projects. • **Building trust:** Sharing experiences of interventions to help normalise such practice, and ensure lived experiences inform programme evaluation.
Community group(s), including town and parish councils.	Groups of local residents who unify around particular – potentially charitable – goals, including environmental, economic and/ or political groups. Often engaged in running local services and facilitating social networks.	• **Building trust:** Acting as established and credible anchors in communities to help establish the legitimacy of a place-based project. • **Coordinating local residents:** Using pre-established social networks to help spread the word about co-design opportunities. • **Place-based design:** collaborating in the co-design of social media posts, physical advertisements, and place-specific branding to help anchor projects to specific local issues. • **Assisting with place-based delivery:** Forming Community Energy Groups or Community Interest Groups (Etc) to help with more complex and granular delivery complications (e.g., in hard-to-reach rural areas), alleviating pressures on LAs.
Local Authorities[xii]	The lowest level of Government – includes council owned social housing.	• **Acting as pre-existing 'place-shapers':** Organisations that already manage and coordinate the operation of local services, shape local development/ planning for economic growth, and know the opportunities/ needs of local people. • **Coordinating local supply chains:** Strong integration with the local supply chain, developing area-based schemes to ensure private sector confidence • **Access to vulnerable and fuel poor residents:** Ownership of social housing provides greater access to vulnerable and fuel poor residents, helping to ensure local needs are prioritised and creating economies of scale through retrofitting entire blocks/ streets at a time.

[xii] In practice local government structures, particularly in England, are complex and responsibilities vary across unitary, two-tier, town, parish and community councils. Two tier authorities only currently exist in England but ongoing local government restructuring is expected to result in all local authorities in England becoming unitary by 2027/28.

		• **Overseeing blended finance models:** de-risking the governance and accountability of area-based schemes through addressing the most at-risk, but less investible, households within neighbourhood or streets.
Combined Authorities (and other regional governance structures)	Regional and sub-regional structures situated around functional economic geographies.	• **Coordinating bids for funding:** Acting as an anchor institution to coordinate the needs of LAs to Central Government. • **Providing granular data access and analysis**: integrating multiple datasets across scales to ensure a consistent basis for targeting and evaluation. • **Coordinating regional supply chains:** Generating a holistic view of how local supply chains interconnect, identifying gaps. • **Engaging with central government:** Using connections to central government to articulate the need for regulatory, legislative and funding reforms on behalf of LAs. • **Helping to address skills deficits:** Regularly assessing the need for skills growth and deficits within constituent areas.
Registered Social Landlords	Those who provide housing to low income, vulnerable and/ or fuel poor residents	• **Helping develop retrofit supply chains:** working collaboratively to create confidence in the supply chain, reduce costs, and help facilitate economies of scale between area-based delivery mechanisms. • **Holding invaluable expertise:** in-depth knowledge on the quality of their housing stock, the interventions that have already been undertaken, and those which are still required. This is essential based on the ebb and flow of interventions that have taken place under government policy. • **Influencing delivery agencies:** working collaboratively to encourage large suppliers and installers to deliver long-lasting benefits to communities (community wealth building). • **Identifying skills gaps:** working with Government to provide training, partnerships and graduate work opportunities. • **Engagement with tenants:** Helping to share information about area-based schemes, including challenging disinformation, and acting as intermediaries between Local Authorities and the private sector – easing the burden on those receiving interventions in their home.

Table 3: A provisional list of roles and responsibilities for different actors based on the reviewed corpus of non-governmental publications

4.4 Build local capacity, including within local authorities

The analysis of building and heat decarbonisation policy in the UK over the last 16 years demonstrates continual processes of 'hollowing out' and abrupt 'filling in' of local authority capacity. Policy is currently re-focused on local authorities as leading actors, with new working partnerships and strategic devolution centred around the ethos that local actors know their area best.

However, local government often does not have the funding or capacity to rapidly upscale their approach to retrofit and heat. Without clear devolved funding mechanisms, this sudden shift in policy could be problematic. Based upon this review, there are clear risks of "local shocks" occurring, whereby intra-organisational competence cannot keep pace with devolution of responsibility. This risk was identified some time ago by the Climate Change Committee [28] and is a significant concern moving forward.

Similarly, ensuring communities are at the centre of retrofitting delivery will require capacity building and upskilling of community groups, including Community Energy groups and charities. There are clear signs that such support is recognised in both the Local Power Plan [2] and Warm Homes Plan [1], but integration across plans is not yet clear. The governance arrangements of, and support delivered by, the Local Power Plan and Warm Homes Plan should therefore be integrated and local and combined authorities should be encouraged to partner with community energy organisations to maximise the impact of funding provided through both plans.

4.5 Long-term stability in funding for both fabric and technological interventions

At present, the Warm Homes Plan reflects a move away from 'deep retrofit' approaches, placing greater emphasis on the deployment of low carbon energy technologies, such as heat pumps and solar PV with storage. This pivot can be partly explained by fluctuating supply chain costs; the government cite, for example, that solid wall insulation has become unviable due to supply chain costs [1]. However, this shift also reflects a broader pattern of inconsistent, short-term funding cycles for fabric measures – an issue which has repeatedly undermined delivery confidence, supply chain investment, and programme continuity. Fabric measures nonetheless retain a critical role, and long-term, stable funding commitments are essential to realising their full potential.

First, although many of the easiest loft and cavity wall measures have been installed under previous schemes (~61-71%) [93], significant gaps remain for harder-to-treat homes. Fluctuating eligibility criteria and shifting policy emphasis across successive funding schemes have compounded these gaps, leaving some of the most vulnerable households without adequate insulation. The evidence is clear: poorly insulated homes do not simply reduce the effectiveness of low carbon heating technologies;

they also have significant impacts on mental and physical health and financial stability for residents. Delivering fabric interventions to these remaining properties requires sustained, long-term funding rather than the stop-start programme cycles that have characterised previous schemes.

Second, there are also concerns about the extent to which these health and fuel poverty reduction benefits are actually measured. The National Retrofit Hub has been clear that property assessments must be reformed to evaluate property performance beyond costs savings alone, incorporating health outcomes and inequality reduction. This shift is an important step towards ensuring that fabric interventions continue to reach the most fuel poor, and that building and heat decarbonisation policy moves towards more holistic, place-based approaches. Without reformed assessment criteria embedded within long-term funding frameworks there is a risk that the broader benefits of fabric measures continue to be undervalued in spending decisions. Community Health Impact Assessments offer a valuable mechanism for capturing these wider benefits and making the case for sustained investment.

Finally, public confidence in fabric interventions cannot be separated from questions of funding stability and programme oversight. The recent National Audit Office review [94] identified serious accountability and quality control failures in solid wall insulation delivery – including widespread failure to meet PAS 2035 standards – with remediation work still ongoing. Both NGO and government publications agree that trust is an essential foundation for area-based approaches, and this highly public controversy risks undermining public faith in retrofit more broadly. Crucially, repeated funding interruptions have also eroded supply chain capacity and contractor quality, contributing to the conditions in which such failures occur. The Warm Homes Agency must therefore demonstrate not only how its oversight mechanisms will address these quality failures and rebuild public trust, but also how it will provide the long-term funding certainty needed to develop a skilled, accountable, and stable retrofit supply chain.

4.6 Initiate a ‘state of data’ and place-based skills review

A shift towards more holistic, place-sensitive and granular approaches to delivery has clear implications for data. Centrally, it requires better data integration, including the usage of experiential data from communities and residents, to inform decision-making at the local and regional level.

A review of data quality is overdue. Our analysis has drawn attention to challenges relating to the quality and accuracy of EPC data (see lessons from the Arbed Scheme in Wales: section 3.1.1), and the lack of comprehensive data linking property characteristics, tenure, income, health vulnerabilities and energy performance. The Government should engage with place-based actors and industry to assess the current state of data for energy efficiency and heat decarbonisation, establish priorities for data integration, and identify gaps which inhibit place-based action.

Data must also be sufficiently granular to support effective place-based delivery. The PRIDE project in the West Midlands offers a useful model of how place-based data can be integrated through sub-regional coordination. More broadly, DNOs now share much more detailed data on network constraints and LAs are increasingly developing Local Area Energy Plans which integrate multiple geo-spatial data and develop prioritised 'whole system' decarbonisation plans. The development of Regional Energy Strategic Plans should also improve access to data and coordination across vectors.

There is also a need for frameworks that effectively integrate techno-economic data and modelling with more holistic and experiential data collected from local communities. Table 4 below provides examples of several participatory mechanisms which can be utilised to enable citizens to review techno-economic modelling, taken from across the corpus of NGO publications.

Overall, the significant spatial variation in experiences of building and heat decarbonisation – including fuel poverty – further underlines the need for LAs to rapidly develop systematic approaches to experiential data collection. While many of the documents in this analysis identify technological skills gaps related to engineering (e.g., the installation of fabric or technology interventions), few identify a parallel deficit in social and place-based expertise. Social scientists and community researchers could have a distinctive role to play in filling in this gap, not only in providing training in place-based theory and practice, but also in supporting the collection and integration of experiential data within place-based projects.

Participatory mechanism	Description and outcome	Utilised where and by whom	Cited in
Estate Renewal Forums	Facilitating co-production between residents and LAs to co-produce specific actions and goals for retrofit, including more-than-retrofit objectives.	Milton Keynes; Milton Keynes County Council	E3G (2023) Enabling Locally Led Retrofit Reforms to Scale Up Effective Delivery [79]
Long-term, in-person engagement	Working collaboratively to build a mutual understanding of local opportunities and challenges, and how these can be addressed holistically within area-based schemes.	Leeds; Leeds County Council	
Loaning thermal imagining cameras and setting up local forums	Allowing residents to assess their own heat loss in their home, both helping to legitimise the necessity for retrofit, but also to help attract interested parties to area-based schemes.	Hampshire; Hampshire County Council	
Community intermediaries/ cooperatives	Using known entities to ensure trust is built and retained throughout retrofit projects; acting as a facilitator between tenants/ owners and the private sector.	Greater Manchester (Carbon co-op)	Climate Connects, Carbon Coop (2015): A community approach to retrofit and potential implications for the fuel poverty agenda [77]
Participating in social events, including open homes weekends, workshops.	Showcasing and promoting experiences and outcomes of whole house retrofit.	Greater Manchester (Carbon co-op)	

Table 4: Select examples of 'more-than-tokenistic' participatory approaches within NGO publications

4.7 Embed one-stop shop services within place-based delivery

Advice services function as an entry point for households to engage with place-based retrofit programmes. Government policy documents indicate that households have historically received advice without a clear pathway to translating recommendations into action. This disconnect between information provision and delivery is a longstanding weakness; customer buy-in is an essential starting point, yet remains one of the most difficult aspects of retrofitting homes. A lack of buy-in also has a considerable impact on the effectiveness of area-based schemes – undermining economies of scale and reducing private sector confidence in investment.

Rather than treating advice as a standalone intervention, local one-stop shops embed it within a broader support infrastructure, enabling tailored communication campaigns, community cohesion and skills development through local events [79],

and peer-to-peer advocacy that boosts participation and trust [77]. By reducing the perceived burden on residents, one-stop shops can meaningfully increase household engagement in programmes [84]. Critically, however, locally delivered advice services of this kind are most effective when they operate within — and are supported by — a stable national advice infrastructure. Without national coordination, local schemes risk fragmentation, inconsistent quality, and gaps in coverage for households falling outside geographically targeted programmes.

This review therefore identifies a clear need for place-based schemes to integrate one-stop shops – helping to connect local advice to place-based delivery. Embedding advice within trusted local community organisations – rather than delivering it through arm's length or purely digital channels – is particularly important for reaching households most in need. Trust is a cornerstone of successful building and heat decarbonisation interventions, and arguably more important within place-based delivery, where community relationships and local legitimacy are central to programme effectiveness. This ensures that advice is not incorporated into place-based approaches in a tokenistic way, enabling relational and experiential knowledge exchange rather than merely information provision.

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Appendix 1: Rankings assigned to the emphasis on place-based thinking within each publication

Ranking:	Designing building and heat decarbonisation schemes:	Delivering building and heat decarbonisation schemes:
Strong engagement with place-based approaches to building and heat decarbonisation	**<u>Centrality of place-based thinking:</u>** Mentions place-based (or cognate) approaches within the executive summary, abstract, and/or title, indicating its centrality as a concept within the document. Actively identifies and defines what place-based thinking actually means in practice and/or promotes engagement with place-specific or socio-spatial nuances to achieve building and heat decarbonisation. Often utilises case studies which support PB/AB theory and/or delivery. **<u>Definition, repetition and salience of terms:</u>** All place-based and (cognate) terminology is well-defined, frequently employed and engaged with in a salient way.	**<u>Governance:</u>** Strongly promotes devolved, bottom-up approaches to governance, which aim to empower community actors and local structures. Critical of top-down and technocratic approaches to delivering schemes. **<u>Funding schemes:</u>** Emphasises that funding schemes should be devolved to empower local actors, at minimum to LAs, to sufficiently engage with the geographical variability and context of places. **<u>Delivery model:</u>**

	Consistently promotes the benefits that place-based thinking can bring to building decarbonisation schemes. **<u>Emphasis on stakeholder empowerment:</u>** Strong emphasis on social justice and/or people/citizen/ community empowerment in leading/delivering building decarbonisation schemes. Often interested in tangible benefits beyond retrofit and health incentives, such as community wealth building and skills development for local community actors.	Promotes community-led approaches, drawing upon local forms of knowledge, including empowering community groups, LAs and actors within local supply chains. **<u>Granularity of delivery approach:</u>** Emphasises the value of more granular delivery models/approaches (e.g., "beyond local"), including in discussion of data for decision-making, or through using terms such as "neighbourhood" or "street" to guide place-based delivery.
Moderate engagement with place-based approaches to building and heat decarbonisation	**<u>Centrality of place-based thinking:</u>** Mentions place-based (or cognate) approaches somewhere within the main body of the text and broadly defines them, but tends to limit those discussions to specific sections/paragraphs. Some engagement with what place actually means and the potential benefits of adopting a place-based approach. **<u>Definition, repetition and salience of terms:</u>** Focuses more on the value of place-based (or cognate) terms in the delivery of building and heat decarbonisation rather than actually adopting a concrete and well-justified place-based stance. Place-based (or cognate) terms limited to certain sections but engaged with comprehensively in those sections. **<u>Emphasis on stakeholder empowerment:</u>** Recognises the positive role that community empowerment can have, particularly in how effective community engagement can have in scaling up the delivery of local/area-based schemes, but does not focus significantly on enhancing leadership capabilities of local/community actors. Focuses more on community engagement within technocratic decision-making processes.	**<u>Governance:</u>** Emphasis on mixed, multi-scalar approaches to governance, often combining top-down funding schemes with interspersed regional or local delivery from LAs. Focuses on using local or area-based delivery approaches to improve economies of scale, speed up building decarbonisation processes or to target specific groups, but with limited granularity (e.g., neighbourhood, street-by-street) beyond that. **<u>Funding schemes:</u>** Funding schemes are often top-down but with local delivery – usually through LAs. Funding schemes are often piecemeal and competitive. **<u>Delivery model:</u>** Emphasises following national regulations and funding schemes, but delivered by local groups who "know their area best". More focused on the local level as an effective model of delivery rather than as an interventionist approach. **<u>Granularity:</u>** Stops at 'local' or 'area-based' discussions of delivery.
Weak engagement with place-based approaches to	**<u>Centrality of place-based thinking:</u>** Limited mention of place-based (or cognate) approaches, often relegating such terms to case studies, example boxes, or appendices.	**<u>Governance:</u>** Promotion of top-down forms of governance, using household-led approaches to target funding schemes rather than geographical targeting.

building and heat decarbonisation	Terms are often poorly defined. Case studies often missing or limited. **Definition and repetition of terms:** Seldom uses any of the place-based (or cognate) terminology, nor does it define those terms and appraise their value. **Emphasis on local empowerment:** Recognises the value of local groups but does not promote models which aim to empower those groups. More extractive views on community engagement within technocratic modes of thinking than legitimate engagement. Often a concrete focus on addressing fuel poverty.	**Funding schemes:** Funding schemes are difficult to combine, with strict targeting criteria to specific social groups, and underpinned by limited and competitive bidding processes. **Delivery modes:** May recognise devolved or local actors' roles as peripheral delivery partners (e.g., to build trust, spread information) but does not empower those actors, or recognise them as delivery partners. Community engagement is often absent. **Granularity:** Often nationally-defined funding schemes with limited exploration of different scales of delivery. Some mention of providing funding to LAs or social housing providers.
No engagement with place-based approaches to building decarbonisation	**Centrality of place-based thinking:** No application of place-based or cognate terms. **Definition and repetition of terms:** Terms are entirely absent from the text. **Emphasis on local empowerment:** Often emphasises addressing a national crisis (e.g., fuel poverty) without sophisticated discussion about the geographical variability of such issues.	**Governance:** Strong top-down emphasis on delivery, policy and planning mechanisms. **Funding schemes:** Funding schemes are administered by central government. **Delivery modes:** Emphasis on delivery from central government. **Granularity:** May use the term 'local' but only to references LAs.