



***Retrofit and Greater Manchester:
Landscape, Governing and Practice***

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1. Introduction

Urban retrofitting – the systematic reconfiguration of socio-technologies of energy in the existing built environment and infrastructure – is critical to the achievement of ambitious carbon reduction targets in the UK. Internationally models of urban retrofit are being developed, promoted and attempted to be replicated by the C40s network and cities within this network have the ambitions of being retrofit exemplars in particular New York, London and Toronto. In order to realize the ecological and economic benefits of retrofit cities are continually searching for a ‘fix’ that allows them to upscale retrofit from a largely ad hoc and piecemeal activity into strategic and systemic programmes that transform existing cities. In order to develop fixes that can overcome the obduracy of existing repair based retrofit regimes cities are key sites for experimenting with the development of new retrofit pathways.

In this paper we use a case study of the dynamics of retrofit in Greater Manchester to critically explore (a) why retrofit has become an important focus in Greater Manchester; (b) how we have developed understanding of retrofit in Greater Manchester; and (c) what the issues are that this raises and the gaps that need to be addressed. In doing this we have engaged with a wide range of activities and more than 50 interests who are involved in what can be broadly characterised as efforts to retrofit the built environment in Greater Manchester. These activities are promoted by a wide range of interests that are both public and private, operate at national, regional, urban, community and household scales and who often work together in partnerships – either longer-term or for the duration of an initiative.

The rest of this paper is structured into five sections. Section 2 reviews the key retrofit drivers and pressures on Greater Manchester. Section 3 reviews the wider political and historical context that shapes retrofit responses. Section 4 examines the geography of retrofit responses in the city region. Section 5 analyses the two dominant pathways of response. Finally the conclusion outlines how a strategy of retrofitting ‘with’ Greater Manchester might be constituted.

2. National Retrofit Pressures and Drivers on Greater Manchester

Retrofit, and specifically low carbon developments, in the Greater Manchester city-region have not developed within a vacuum but in response to a complex set of pressures and drivers. The focus here is on those that are seen as having the greatest impact within Greater Manchester. These pressures exist at both the national and the local level, with a degree of overlap between them. At the national level, the focus is on pressures and drivers that have been seen as being important in Greater Manchester that includes policy specific initiatives, but also general national objectives that have impacted on the urban context. The interpretation of national policies and objectives has in part been reflected in local policy, generating particular policy responses.

At both levels, there are a number of key policy objectives and programmes that have developed over time. There is a wide range of differing pressures originating from the national level, which in turn shape and are shaped by international pressures, especially around efforts to reduce Greenhouse Gas emissions. These landscape pressures can be divided up into two main areas. First, there are the national objectives that represent more general objectives being pursued by central governments. Second, these general objectives then in turn influence specific national policies. Consequently, the retrofit landscape is one that is complex, shaped by national objectives and particular national policies. For instance, a significant proportion of retrofit activities are focused around buildings and construction, which in turn brings in a significant body of buildings regulation. However, though the review of literature and interviews on retrofit activities in Greater Manchester, only certain national objectives and policies are viewed as being significant in shaping local action. The national objectives and policies that are referenced from within Greater Manchester are shown in the timeline below, figure 1.

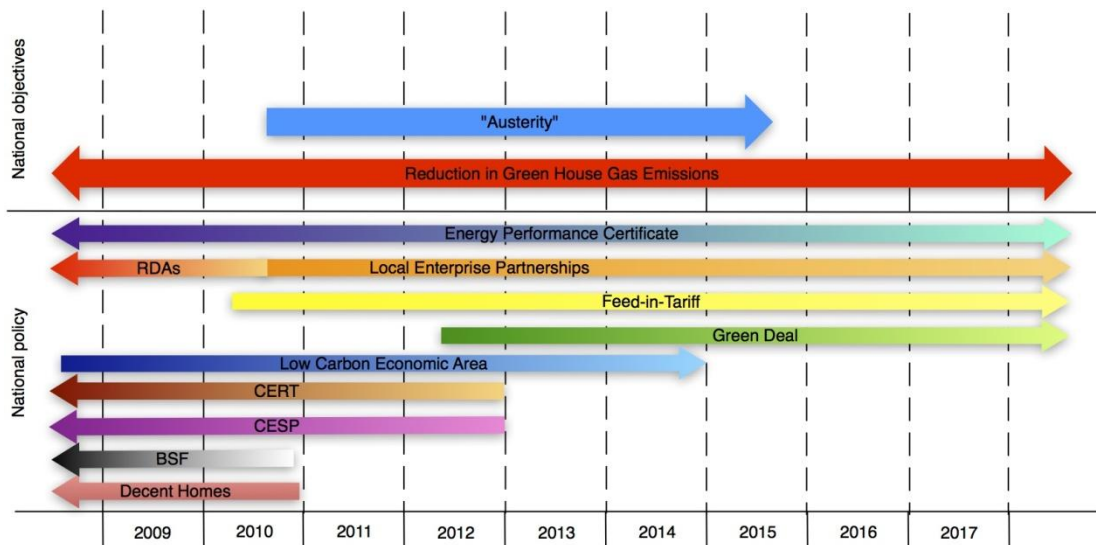


Figure 1 Time line of national objectives & policy pressures around retrofit in Greater Manchester

2.1 National Objectives

Reduction of greenhouse gas emissions has been a national objective for over a decade, with the Kyoto Protocol being the principal international framework within which targets have been agreed. Previous UK governments have made commitments to meeting these targets, collectively through the EU. As such, emissions reduction has been a key national objective for a number of years and has become part of the national policy landscape. Reducing Greenhouse Gas emissions, and in particular CO₂ emissions, is both implicit and explicit in many of the retrofit activities. Carbon reduction strategies to reduce CO₂ emissions are common among local councils in Greater Manchester including Bolton's Carbon Management Plan 2008-2013 (Bolton Council & Carbon Trust, 2009), Bury's (Bury Metropolitan Council, 2007), and Oldham Carbon Management Action Plan 2005-2010 (Oldham Metropolitan Council, 2005). Manchester City Council wants to cut 1 million tonnes of CO₂ a year by 2020 and set the foundations to become "a truly low carbon city by 2050" (Manchester City Council, 2009).

The other main national objective that has shaped the debates around retrofit in Greater Manchester has been the current government agenda of austerity. The government has undertaken cuts across a range of areas including local government, which has seen £2

billion cut from local government services (Bawden, 2010). The impact of cuts was made during two interviews. The head of energy for Manchester City Council, Walter Dooley, talking about the lose of 20% of the councils staff and the council disposing of property. Funding for local government has always been seen as being constrained, but the current agenda of austerity has resulted in deeper cuts to local government services. It is also important to mention other national objectives that are even more implicit than those already listed; sustainable development and economic growth. Both are broad underlying objectives of national government that has been incorporated into local government policy making, as well as helping to shape community groups.

National objectives represent a very broad narrative within which local level actors make reference to as well as interact with. The austerity agenda has had very real implications for retrofit activities, both for local government as well as for local community groups. National objectives, as will be explored in the following section, tend to cover a much longer timeframe.

2.2 National Policy

There are a range national policies that have been identified as having been referenced by different participants in retrofit in Greater Manchester; the Decent Homes programme, Building Schools for the Future (BSF), the Community Energy Saving Programme (CESP), the Carbon Emissions Reduction Target (CERT), the Low Carbon Economic Area (LCEA), the Green Deal, the Feed-in-Tariffs (FITs), the Regional Development Agency (RDA) & the Local Enterprise Partnership (LEP), and the Energy Performance Certificate (EPC). Not all the policies operate concurrently, as shown in figure 1. Some policies have already ended; having had an impact on earlier retrofit activities, while some, most notably the Green Deal, are major policies that are already shaping policy developments within the Greater Manchester city-region. For each of the different policies, the background to the policy will be briefly outlined, followed with evidence of its implications for retrofit in Greater Manchester.

The Decent Homes programme, run from the department for Communities & Local Government, was introduced in 2000, ended in 2010, to address a backlog of repairs in

social housing (National Audit Office, 2010). The aim was to improve housing stock to a “decent” standard, providing funds to improve the condition of social housing run by social housing providers, Registered Social Landlords (RSLs) and Arms Length Management Organisations (ALMOs). While the focus of the Decent Homes programme was not per se retrofit, but the general improvement of the property, the programme has had two main impacts on retrofit. The programme was used to make some improvements that can be considered retrofit. However, the Decent Homes programme has had another more longer lasting impact on Retrofit activities. The shift to retrofit and the Green Deal is seen as being a continuation of the earlier Decent Homes programme by RSLs and ALMOs . The programme provided a clear set of guidelines for improvements being undertaken by RSL/ALMOs. However, for retrofit the goal of reducing emissions is less clear and providing warmer homes is more difficult due to a lack of experience and knowledge.

The Building Schools for the Future, BSF, was established to refit or replace schools across the country. The programme was made in reference to the activities of Manchester City Council. The BSF was not focused on retrofit but energy improvement measures were made during refurbishment or replacement, including behavioural change in the schools working with local charities and pupils and teachers.

The Community Energy Saving Programme, CESP, is a programme run from the Department of Energy & Climate Change, started on the 1st September 2009. CESP is targeted at households in low-income areas in order to improve energy efficiency and thus reduce fuel bills (Department of Energy & Climate Change, 2011a). There are over 4,500 areas of the country eligible for funding, and is to be delivered as a community-based partnership between the local authorities, community groups and the energy companies. The CESP funding regime has been used by Northwards Housing and Oldham Council to fund particular retrofit initiatives with in Greater Manchester.

The Carbon Emissions Reduction Target, CERT, main goal is to meet the UKs Kyoto Protocol obligations to reduce CO₂ emissions. CERT is now seen as paving the way for the Green Deal, with CERT being extended to 2012. The funding from CERT comes from domestic energy suppliers with a customer base of more than 50,000 (Department of

Energy & Climate Change, 2011b). CERT funding has been used by Oldham Council to fund its participation in the Get Me Toasty programme in Greater Manchester.

The Low Carbon Economic Area (LCEA) was an initiative of the previous Labour Government, as part of a low carbon industrial strategy. A number of low carbon zones based around particular sectors were selected. The AGMA put in a proposal for an LCEA focused on the built environment, which was subsequently approved at the end of 2009, with the LCEA running for five years (North West Regional Development Agency, 2009). Within Greater Manchester, the LCEA has become an umbrella under which low carbon activities have been brought together, becoming the most clearest manifestation of retrofit activity in Greater Manchester (AGMA, 2010a).

The Green Deal is a national policy established by the current government and run from the Department of Energy & Climate. The Green Deal was introduced as part of the 2010 Energy Bill and establishes *“a framework to enable private firms to offer consumer energy efficiency improvements to their homes, community spaces and business at no upfront costs, and recoup payments through a charge in instalments on the energy bill”* (Department of Energy & Climate Change, 2010:5). The Green Deal is seen as being the next major development in retrofit in Greater Manchester and as a source for funding for projects due to the limited amount of public funding.

The Feed-in-Tariff (FITs) were created through the Energy Act of 2008 and came into operation from the 1st April 2010 (DECC, 2011). The aim of FITs is to encourage small scale renewable energy production, usually under 5MW and covers PV, wind turbines, hydroelectricity, anaerobic digesters and micro CHP (Energy Saving Trust, 2011). The FITs guarantees an income for any energy produced, higher than if produced from non-renewable means, for a number of years. Local authorities, schools, RSL/ALMOs and individuals have used the FITs to develop low carbon energy sources. Manchester City Council has looked at their portfolio of properties to select them for FITs projects, as well as providing advice to schools. Charities groups have also provided advice to individuals and community groups with regard to FITs, partly due to the issue of retrofit “Cowboys” (as commented by some interviewees).

The Local Enterprise Partnerships (LEPs) have been established to replace the Regional Development Agencies (RDAs) and are run through the Department of Communities & Local government. There is a LEP for Greater Manchester, based on the area covering the AGMA and being run by it. The proposal for the LEP was developed by the AGMA and includes the low carbon economy as part of its programme *“local investment in Greater Manchester over the five year period of the LCEA could be in the region of £10 billion, the majority of this would be through retrofit of the residential sector, public and private sector estate, as well as some flagship new developments and critical infrastructure”* (AGMA, 2010b:23).

The Energy Performance Certificate (EPC) provide information on the both the current energy use of a property, and its potential energy saving (Directgov, 2011). It is a requirement for both commercial and non-commercial properties. It is within the commercial sector that the EPC was brought up with respect to Greater Manchester. The commercial property provider mentioned that the EPC requirement had an impact on their business, with being able to show improved energy performance potentially being attractive to clients (). EPC also represented a set of data that could be used by local governments to target retrofit interventions, however, the data was not available for local councils.

3. Retrofit and Greater Manchester in Context

The generic view that cities and city-regions should systematically reconfigure the relationship between energy use and the built environment has particular manifestations. Why retrofit is an issue that has been prioritised in Greater Manchester requires an understanding of the changing governance context of Greater Manchester, particularly since the 1970s, and the ways in which this has contributed to shaping contemporary action on retrofit.

Here we examine different contemporary understandings of what is meant by ‘retrofit’ in the Greater Manchester context. In doing so we outline the dominant (policy and business elite) representation of urban retrofit. Developing understanding of this dominant

representation we set out the key facets of why this can be seen as a concerted attempt to make retrofit markets. This agenda remains highly aspirational and, to date, has been embedded in only a sporadic and limited way. We lay out reasons why this is the case. We also set out alternative visions and motivations for a retrofit agenda for Greater Manchester that encompass interests outside of those of political and business elites, in particular 'community' (neighbourhood, organisations, small scale local initiatives) actors. These visions see retrofit in a very different way to the dominant view of retrofit in that they integrate more localised understandings with the possibilities of the retrofit agenda. Yet these visions often remain limited in their achievement for a range of reasons. In this paper we set out why this is the case. We then go on to open up ways of bringing together the visions and the organisational mechanisms and forms of knowledge that are necessary for their effective integration.

We have written elsewhere and in detail about the political and governing context of Greater Manchester (Hodson and Marvin, 2012). In summary, Greater Manchester is a metropolitan county of around 2.6 million people, encompassing 10 local authorities. Greater Manchester was established in 1974 and operated on the basis of two-tier governing arrangements where the strategic level Greater Manchester County Council shared power with the 10 metropolitan boroughs that constituted it.

Following the 1985 Local Government Act and the associated political attack of the Thatcher government on metropolitan government, the Greater Manchester County Council was abolished in 1986. Subsequently many powers were devolved back to the 10 boroughs while others powers – including transport and emergency services – operated at the metropolitan level through the Association of Greater Manchester Authorities (AGMA) and associated agencies. In addition to some powers being devolved and others falling within the remit of metropolitan agencies there was also the emergence in the post-1986 landscape of an urban growth coalition within Greater Manchester, which particularly promoted the urban core of the metropolitan area.

In this new metropolitan governance and politics there was the development of an Olympic bid, the Metrolink tram network, a successful Commonwealth Games bid for 2002 and a development led response to the 1996 IRA bomb in central Manchester. Frequently the

politics of governing Greater Manchester in the post-1986 period has been one of the external positioning of Greater Manchester vis-à-vis other UK cities outside London and other European cities and as a test-bed for UK national government initiatives and policy experimentation. Within the metropolitan area there has been a concentration of political and governing power in the hands of agencies and coalitions of political elites and business. So, though in 1974 Greater Manchester was constructed as a strategic tier of government paradoxically since 1986 there has no elected formal governing structures. This has meant a strategic tier in Greater Manchester that is opaque to Greater Manchester publics, where significant focus is on the urban core and where politics and governing in Greater Manchester is often within the 10 local authorities or outside of the realm of formal politics.

Historically there has been a shift from governing by government to governing without government. There has been a further step-change in the second half of the 2000s with Greater Manchester, along with Leeds city-region, being designated Statutory City-Regional Pilots in the 2009 UK Budget and, subsequently the designation and establishment of the Greater Manchester Combined Authority in 2011 constituted by 10 (indirectly) elected members of the 10 local authorities. This was prefigured by plans to establish six city-regional Commissions for Greater Manchester and in addition the Transport for Greater Manchester Committee. The Commissions are: Commission for the New Economy, Planning and Housing Commission, Environment Commission, Health Commission, Public Protection Commission and the Improvement and Efficiency Commission. The Commissions sit beneath the GMCA.

The result of this has been the emergence of a new metropolitan governance at a metropolitan scale but one where the embedded capacity to act is limited, where national priorities remain an important shaper of metropolitan priorities and where the financial crisis post-2008 has created the conditions for an era of austerity within which efforts to constitute the capacity to shape retrofitting strategies needs to be understood.

What this means is that national austerity governance is shaping the metropolitan agenda through using forms of state intervention that are reducing the flows of state funding to the metropolitan area on the basis of seeking to 'keep the markets happy' but using

governance interventions and limited forms of public funding to promote the private sector and the development of business-led forms of governing, such as Local Enterprise Partnerships (LEPs). This means that national strategies that have shaped metropolitan governance since the middle of the 2000s - radical carbon reduction and sub-national carbon budgets, the systemic reconfiguration of urban and regional infrastructures and resource flows that this implies, and experimenting with and re-thinking how state-space is governed – will be re-interpreted through the lens of the politics of austerity.

This will have consequences for efforts to embed new the city-regional governing framework which is being constructed but which will be reliant on limited and often short-term resources in doing so that promotes new national priorities in an age of austerity and which will likely have significant consequences for the balance between economy and ecology.

4. Retrofitting in Greater Manchester: A typology of Retrofit Initiatives

Retrofit activities in Greater Manchester covers a complex range of activities being undertaken at different levels by different interests. Mapping out these interests is a complex process. However, there is a geographical spread of both the activities and the participants for retrofit in Greater Manchester. By looking at the different layers of activities it is possible to identify a number of distinct levels of activity.

The levels of activity are **Zones, Areas & Corridors, Portfolio, Community, Streets** and **Single Building**. Within each of these levels, there are specific characteristics that are reflected in the activities being undertaken. For each of the levels a number of examples are identified, each with specific interests, motivations and outcomes. While these examples should not be considered the definitive list of activities, they are chosen to highlight the diverse nature of the activities. (see table xx) For each of the geographies, the examples will be outlined, including the interests, the motivations and the outputs. This will then be followed by a summary of the geography further the exploring the stacking of layers of activity. It is also important to note that there are varying degrees of interconnectivity between the different levels. In particular, between the zones, areas &

corridors and the streets and individuals buildings; a direct result of how one of the examples, the Low Carbon Economic Area, has been developed.

Geography	Examples	Interests	Motivations	Outputs
Zones, areas, corridor	Low Carbon Economic Area for the Built Environment	GMCA members, national government, Social Landlords, private sector, universities	Economic development through carbon reduction,	Identity creation, workpackages of activities & projects
	Get Me Toasty	7 of the 10 GMCA members, tenants, British Gas	Improve the living conditions, insulate properties	Provision of insulation
	Manchester Corridor	Manchester Council, MMU & Manchester University, NHS, Manchester Science Parks, NWDA	Economic development through science, knowledge & innovation	Place based creation and identify, creation of a business location
Portfolio	Bruntwood property	Bruntwood, contractors, (ESCO), commercial tenants	Reduction in energy usage for properties, long term sustainability	Maintenance of properties, improved commercial attractiveness
	Northwards Housing: Decent Homes programme	Northwards Homes, tenants, DCLG, contractors	Improvement in the living conditions in properties	Fitting new kitchens, toilets, bathrooms
Community	Bollington Carbon Revolution	Bollington Civic Society, locals, local government	Reducing the carbon footprint of the town, sustainability	Education, outreach, building refurbishment
	Carbon Co-op	URBED, residents, local government	Provision of knowledge on carbon reduction, buying group	Help in purchasing goods & services
	Biospheric Foundation	Urban Splash, Manchester University, local residents	Urban ecological project	Urban farm, local employment, research space
Streets	Barton Village	City West Housing Trust, tenants,	Refurbishment of housing stock	Improved living conditions for tenants
	Wimpey No-fines insulation	Northwards Housing, ERDF	External insulation on solid wall properties, a project of the LCEA	Insulation of 746 hard to treat properties
	St. Marys Estate	First Choice Oldham, Oldham Council, ERDF, CESP	Improve conditions for tenants, a project of the LCEA	Replacement of old heating system, solid wall insulation
Single property	CIS Tower PV cladding	Co-operative Financial Services,	Ecological refurbishment	Replacement of the existing tiles

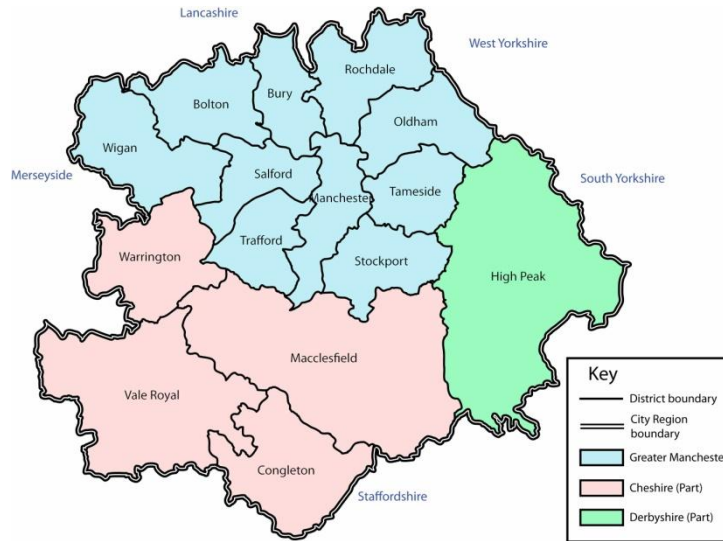
		NWDA		with PV due to age
	Trafford Eco-home	Individual property owner, Trafford Council	Ecological living demonstration of a private property	Properties fitted with eco-technology
	Salford Energy House	University of Salford (ERDF, NWDA?)	Technology demonstration & research, innovation	Re-built 1920s property for research

Table 1 Geography of Retrofit in Greater Manchester

4.1 Zones, areas & corridors

The geography of zones, areas & corridors provides the ideal location to situate both it, and to also put Greater Manchester into context. Spatially, zones, areas & corridors cover the widest area for activities. At its greatest extent it covers the whole of Greater Manchester city-region. The Greater Manchester city-region is thus understood as being the ten local authorities that make up the Greater Manchester Combined Authority, GMCA, and Association of Greater Manchester Authorities, AGMA; Bolton, Bury, Manchester, Oldham, Rochdale, Salford, Stockport, Tameside, Trafford & Wigan. Map 1 below shows the distribution of the ten local authorities that make up Greater Manchester, in blue, in relation to the surrounding councils.

The Greater Manchester city-region represents a collection of local governments, a new administrative framework for collective policymaking, and a particular level for activities being undertaken around retrofit. However, there is reference made to a community project undertaken in Macclesfield. Activities taking place within the geography of zones, areas and corridors are not limited to the whole of Greater Manchester; this is just its greatest extent. Spatially zones, areas & corridor can either cover all or parts of the Greater Manchester city-region, and down to parts of an individual authority. The underlying factor for zones, areas & corridors is that a clear geographical boundary exists, and that it covers a larger area than the other geographies.

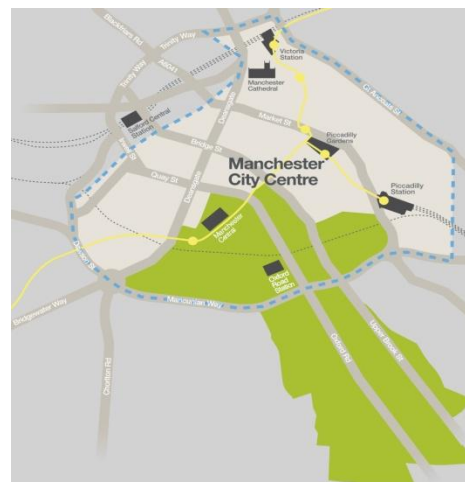


Map 1 Greater Manchester (Wikimedia, 2009)

They represent a contiguous area for retrofit activity, but as will be shown through the different examples, activity tends towards strategic or programmes for retrofit activity, rather than individual projects.

At the level of zones, areas & corridors, the examples presented are the Low Carbon Economic Area for the Built Environment (LCEA), 'Get Me Toasty', and Corridor Manchester. Within the in the introduction, it was stated that the examples for exploring retrofit projects presented did not represent the fullest extent of activities. However, in the case zones, areas & corridors, the examples presented do represent a more complete picture of the activities at this level. Additional examples include behavioural change projects and the Green Deal.

Returning to the examples listed earlier, spaces that they operate on differ in size. already stated, the LCEA as a programme the whole of the Greater Manchester city- the case of the Get Me Toasty programme, of the ten local authorities that make up the are participating. The Corridor Manchester



the
As
covers
region. In
seven out
AGMA

Map 2 Corridor Manchester
(Corridor Manchester, 2010)

programme is geographically constructed within a much smaller area. Map 2 shows the extent of the Corridor Manchester programme area, in green, in relation to Central Manchester.

The interests participating at this level include a degree of overlap. The LCEA is a programme run by the AGMA, and so includes the ten local authorities that make up its members. Through the LCEA programme, there are a number of different participants, participation reflecting the particular workpackages involved. While there are eight workpackages, currently only the first two, covering domestic retrofit and commercial retrofit, are active. Within domestic retrofit there is participation from the Greater Manchester Registered Social Landlords (RSLs) & Arms Length Management Organisations (ALMOs), the University of Salford, and local procurement agencies. National level interests is also represented, including the Energy Savings Trust (EST), the Housing & Communities Agency (HCA), Buildings Research Establishment (BRE), the National Housing Federation (NHF) and National Energy Action (O'Doherty, 2010). The commercial retrofit workpackage brings in limited interest from the commercial sector; Bruntwood Property and the Cooperative, both local businesses. The LCEA designation itself came from national government.

The Get Me Toasty programme is made up of participation from the AGMA members, though only seven of the ten are participating collectively (. The programme is being run with the Energy Savings Trust, tenants who participate in the programme, and British Gas who have been contracted to undertake the work. The funding regime, through CERT, highlights another interest, that of national government and utilities. Corridor Manchester represents a more localised set of interests drawn directly from the local geography including Manchester City Council, Manchester Metropolitan University & Manchester University, the NHS, Manchester Science Parks and the (currently under replacement) North West Development Agency/ ERDF. The motivations for the Get Me Toasty programme is one that seeks to make properties in Greater Manchester warmer through insulation (Toasty, 2011). Health issues relating to cold housing conditions, such as respiratory diseases and death, were also mentioned as being drivers for the programme.

The LCEA, one of a number across the UK, was established under the previous government as a means to promote economic development in the low carbon economy. For Manchester, the motivations are to use the need for carbon reduction as a means to develop and deploy low carbon technologies in the market, increase investment in science, technology and innovation, increase employment and productivity, and increase investment in Manchester and the UK in low carbon technologies (AGMA, 2009). The Corridor Manchester has five primary motivations; the creation of a sense of place, becoming the leader in green travel planning, improvement on the environment and infrastructure, become a nationally and internationally renowned area in key knowledge sectors, and develop employment and skills at a range of levels (Corridor Manchester, 2009).

From the LCEA, the principle outcomes have been within the policy arena and a series of projects. As already stated, there are a number of workpackages for the LCEA. The workpackage on domestic retrofit has seen five projects funded, four at specific locations, a fifth on behaviour covering the whole of Greater Manchester. Two the LCEA projects will be discussed later. The outcomes of the Get Me Toasty programme will be a process of insulation of properties across Greater Manchester. The programme, which has been run in the past, begins in September/ October time, and over the next three years, 10,000s of properties are to be insulated. Corridor Manchester has more limited outcomes, given that it is more promotional in nature. MMU is building a low carbon campus at Birley Fields in the Corridor Manchester, which is being promoted under the Corridor Manchester activities. However, unlike the other two examples, low carbon activities and retrofit are a small part of the Corridor Manchester programme, not its main focus.

4.2 Portfolio

The geography of portfolios spatially is more focused on a particular property owner, such as RSLs, individual local councils or commercial companies. These interests own the properties and thus are responsible for their maintenance and sometimes their operation. However, unlike in the following examples of geographies, the distribution of properties is dispersed across Greater Manchester, though this does include the clustering of buildings.

The examples that typify the portfolio geography of retrofit activities include Bruntwood and Northwards Holdings. Bruntwood is a major commercial property owner in Greater Manchester, providing office space mostly in the centre of Manchester. Their property portfolio is spread out across Greater Manchester, though most of their properties are clustered in the city centre (Bruntwood, 2011). Northwards Housing is a ALMO of Manchester City Council with 13,000 social housing properties within northern Manchester (Northwards Housing, 2010). There are other examples of such portfolio geographies, in which a company or organisation owns a wide range of properties. In Greater Manchester there are a number of RSLs and ALMOs, as well as each of the ten local councils, the local educational authorities and other commercial property owners.

For both Bruntwood and Northwards Housing, there is an important role for contractors. The contractors undertake particular retrofit activities on behalf of portfolio holders. In the case of Bruntwood this includes service suppliers and contractors, as well as the University of Manchester with whom Bruntwood participate with in the Eco-cities initiative (Bruntwood & University of Manchester, 2010). A major interest for Bruntwood is its tenants who rent office space from the company. For Northwards Housing, its main office co-located with its suppliers and other RSLs in North Manchester. The decision to be located next to its main contractors reflects the close working relationship between them. Northwards Housing, like Bruntwood, also has tenants.

The motivations for Bruntwood for engaging in retrofit activities include the reduction of energy costs in their properties and long-term sustainability. During interviews with Bruntwood personnel, the family owned nature of the business, and ensuring the long term viability for the company for future generations, was mentioned as being a driver for sustainability measures across the portfolio. For Northwards Housing, the motivations for retrofit originate from national initiatives and a particular response to those initiatives. The Decent Homes programme provided funds to improve social housing, but a commitment was also made to reduce energy, water and waste during and after the refurbishment activities. Energy poverty is a particular issue among tenants with which energy saving retrofits can help to address.

The outcomes for Bruntwood are partly indicative of the way the business is run. Refurbishment and maintenance is an everyday part of the companies business. Cost reduction for tenants though Bruntwood has implemented greater energy efficiency of buildings and acting as an energy broker to tenants. The Energy Performance Certificates, EPC, requirement means that commercial tenants, particularly new ones, can see how much energy a commercial property will use. Energy efficient buildings are seen as being a selling point for Bruntwood In the case of Northwards Housing, properties have been improved in terms of the internal structure, such as new kitchens, bathrooms and so forth, as well as reducing the power and water requirements for the building.

4.3 Community

The concept of community is one that is complex and multifaceted. In the context of retrofit activities, a narrow definition focusing on both geographical communities and communities of interest is used. Community projects are located in a specific geography, such as a town or a particular building, but interest in the issue draws participation draws a range of people located within and outside the community. This creates vague geographical boundaries.

There are a number of potential community related examples within Greater Manchester, the examples presented here are those that engage with the issue of retrofit in different ways. The Bollington Carbon Revolution, BCR, is not based in Greater Manchester but in Bollington, 13 miles from central Manchester. The Carbon Co-op is a renewables and retrofit community owned group operating in Mossdale, south Manchester (The Carbon Co-op, 2010). Finally, the Biospheric Foundation is based in an old factory building in Blackfriars, Salford.

Community groups engaged in retrofit can include participation from other community groups. For BCR, there is a relationship to a more general community group, Bollington Civic Society. Participation from local residents forms a key plank of community groups, providing time and effort for the groups' activities. Local government is also an important dimension for the BCR, providing additional funding for activities. The Carbon Co-op is also a group made up of local residents, but with another organisation, URBED, having established and supporting the group. Funding has come from local government and the

NWDA. The Biospheric Foundation has a commercial company, Urban Splash, as the owner and provider of the factory space. A partnership has been established with local residents groups, national environmental groups, Manchester Metropolitan University and other local groups are involved in using the space.

The motivations for the BCR was to identify and reduce the carbon footprint of Bollington, educate and raise awareness on sustainable development in the town, and to share experiences with other community groups and influence policy makers (Bollington Carbon Revolution, 2011). The Carbon Co-op motivations is to reduce the carbon footprint of individuals, a response to national pressures, improving the local community and getting local residents involved (The Carbon Co-op, 2010). The Biospheric Foundation has a more diverse set of motivations reflecting a wider focus. These motivations focus on bring together academics, practitioners and the local community to develop a better urban future. Activities are focused around renewable energy generation, improving local biodiversity, education & training, building retrofitting, forest gardening, food culture, and art & culture (Biospheric Foundation, 2011).

The outcomes of the retrofit activities for each of the community groups have some similarities between each other. The BCR have undertaken activities including undertaking an carbon audit of Bollington, using a £50,000 grant from the local council to insulate properties, a stand at local events, a local hydro-scheme, PV on roofs, policy consultation with input into local & regional plans, supporting other groups, DECC access on communities and participation in Global action plan event in London (Nicola Percevil – BCR). The identified outcomes of the Carbon Co-op are more around education and publicity. A manual has been produced, groups events, a bus tour and meetings have also been carried out. The Biospheric Foundation has only recently become activity, having taken over and decorated part of the Urban Splash building. The current activities focus on getting a bakery/café up and running and providing space for research students from MMU.

4.4 Streets

The geography of streets is based around an area, in particular housing. It is larger than an individual street, and in the case of retrofit activity, there are activities that are taking place

across a series of streets. The three examples identified are Barton Village refurbishment, Wimpey No-Fines insulation and the St. Marys Estate. The activities take place within a specific area, covering collections of streets. The three examples are spread out across Greater Manchester; Barton Village is located in Salford, Wimpey No-fines is located in North Manchester, while St. Mary's Estate is located in Oldham.

In all three examples, the interests are very similar. They all include social housing providers, both RSLs and ALMOs: City West Housing Trust in Salford, Northwards Housing Trust in North Manchester and First Choice Oldham in Oldham. With any interventions taking place in social housing properties, there are also tenants to be considered. The tenants are in some cases still living in the properties when the interventions are taken. The Wimpey No-fines and St. Marys Estate examples are projects undertaken through the LCEA workpackage 1. These programmes were funded through the ERDF, the projects were proposed by the respective local authorities, Manchester City Council and Oldham City Council, and brought together through the AGMA. The funding match funding for the St. Marys project has come from the Community Energy Saving Programme, CESP.

The motivation for the Barton Village programme is the refurbishment of the existing housing stock, a collection of four tower blocks. The area has suffered from a lack of long term investment, with the current investment aiming to create a more attractive environment for the people living in the area (City West Housing Trust, 2011). The Wimpey No-Fines project is funded by the ERDF through the umbrella of the LCEA. As such, the motivation for the activities reflects those of the LCEA and its members. However, there are also local motivations for the project itself. The programme of insulation aims to improve the thermal performance of the properties, helping to address the issue of fuel poverty. The St. Marys Estate has similar set of motivations to the Wimpey No-Fines as it is also a project of the LCEA. For Oldham council, the project was proposed as the area has high degrees of fuel poverty, with improved energy efficiency benefitting tenants (Oldham Partnership, 2010).

The outcomes, like many of the projects identified in this paper, are still on going, and thus not complete. The work for Barton Village is already underway and is focused on the physical infrastructure of the buildings. Some of the activities focus on improving the

thermal efficiency of the building, such as cladding, while others are more general in nature, such as new lifts, asbestos removal, and new electrical wiring. The Wimpey No-Fines project sees is focused on insulating 746 hard to treat properties. Wimpey No-fines are solid walled properties, which require external insulation, as there is no cavity. The St. Marys outcomes have focused not just on addressing solid wall insulation but also include the replacement of the old heating system.

4.5 Single Buildings

The final geographical scale is the single building activates. While many of the other geographies have single building interventions, such as individual properties in the refurbishment examples already listed. However, the difference for the single building geographies is that the focus is on a single building, not one building in a wider programme of activities.

There is a wide range of single building examples. Many have been publicised, such as through the Sustainable Energy Academy, SEA, SuperHomes initiative. There are also activities that are not being picked up, as they are not promoted. It is within the single buildings geography that there is a hidden world of retrofit. The examples identified are those that have been promoted by various interests and include the CIS Tower PV cladding, the Trafford Eco-Home and the Salford Energy House.

The CIS Tower is located in the centre of Manchester and has been one of the tallest buildings in the city since its construction in the 1962. The building is owned by Co-operative Financial Services, CFS, who undertook the refurbishment of the building in 2005. In addition to CFS, the North West Development Agency and the Energy Saving Trust also provided funding for the retrofit activities; £885,000 and £175,000 respectively towards the total £5.5m project (BBC News, 2004). The Trafford Eco-Home is a privately owned three-bedroom house built in 1934 and located in Sale. Its owner and Trafford Council have promoted the property (Eco-home, 2008). The Salford Energy House is a project of the University of Salford. It is a pre-1920s Victorian terraced house from Salford reconstructed inside a controlled environment on the University of Salford Campus.

The motivation for the CIS Tower PV cladding was in part the need to refurbish the existing external cladding, which was over 40 years old. The CFS has made commitments to ethical and environmental policies, including sustainability. The Trafford Eco-house was a personnel commitment to ecological living due to declining fossil fuel and to promote the experiences to others. The Salford Energy House represents another set of motivations, that of technological demonstration and research to improve energy efficiency of processes and products.

The CIS Tower PV cladding was put into place in 2005, having replaced the original 14 million grey tiles with 7,244 solar panels (Sharp UK, 2011). The CIS project was undertaken before many of the other projects listed here, and has been used by AGMA to micro energy production (Ove Arup & Partners Ltd & AGMA, 2009). For the Trafford Eco-House there have been both changes in the building, through the fitting of eco-technologies, but also through promotion of the activities. This promotion has been not just in retrofit related activities but also around general sustainability. The Salford Energy House has been built and is being used for research at the University. The Salford Energy House has also been used to promote the University and retrofit across the North West to a regional and national audience (University of Salford, 2011).

5. Mapping Retrofit across Greater Manchester

The mapping of retrofit in Greater Manchester identifies a number of different levels of activity. At its widest level, there are the zones, areas and zones of activity. These tend to focus on wider programmes of activities and not necessarily individual retrofit interventions. For examples, it is at the programme level that the LCEA is organised, but it is at lower levels that projects are implemented. The portfolio approach does represent individual interventions on properties, but they tend to be owned by specific organisations, such as private companies or housing organisations. The geography of community represents a complex geography with both interventions in buildings as well communities of interests. How, there does tend to still be a geographical focus. Coming down to streets, we see groups of properties located close within a particular area having retrofit interventions. This is particularly common around social housing. Finally, we have single

building interventions. These tend to be hidden with only those that are high profile being picked up. Map 3 on the following page shows the geographical spread of retrofit in Greater Manchester, while figure 1 shows a stylised diagram of the different layers of retrofit activities.



Map 3 Geography of a range of projects undertaken in Greater Manchester

The map above shows that individual projects that have been identified in Greater Manchester, including the examples that have been listed in this paper. Many of the projects are either single building in nature or cover an area that is too small to be represented fully on this map. This is true for both individual building activities and those taking place across streets. However, there are also activities that cover a wider area, such as the community and zones, areas & corridor programmes. The LCEA and Get Me Toasty programme cover either the whole of Greater Manchester or most of it. The Corridor Manchester programme does cover a large area, as roughly shown in the map above. The

BCR, Biospheric Foundation and Carbon Co-op as community groups cover a larger area as well, a particular part of a city or town. Many of the activities are located in the 'core' of Greater Manchester, the main urban area. Given that the activities are based on buildings, this is to be expected. Even taking this into account, much of the activities are in the Manchester part of Greater Manchester, with other projects taking place in the surrounding areas.

Figure 1 shows a diagrammatic representation of the different layers of retrofit geography in Greater Manchester.

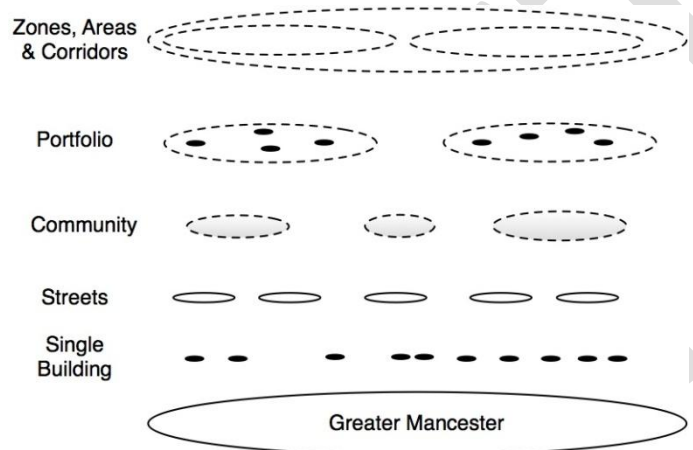


Figure 1 Diagrammatic representation of the geography of Retrofit

The Zones, Areas & Corridors cover the whole of the Greater Manchester area, or significant part of it. Moving down to the portfolio level, there is a wide geographical spread, but it is due to the ownership of individual buildings. The community level is more tightly focused than the portfolio but is still diffuse given that it is focused on both buildings and communities of interested individuals. The streets level is clearly defined geographically, with sets of activities being carried out within it. Finally there are the single building level, the lowest level, though in many cases, the single level links up to some or all of the preceding geographies.

6. Retrofitting IN and ON Greater Manchester

As is the case with many city-regions, Greater Manchester has to achieve significant carbon emissions reductions. It needs to do this in the context of contributing to national emissions reduction targets and also as part of an emerging world of ecological competition between city-regions to have secure access to the 'cleaner' energy resources necessary to literally fuel economic activity. In Greater Manchester a framework for doing so has been set out to achieve targets for delivering domestic carbon reductions of 55 per cent by 2022 as part of a wider targets of 48 per cent carbon emissions reductions by 2020 (GM lcrs). The Greater Manchester low carbon housing retrofit strategy sets out what needs to be done so that the retrofitting of nearly 1.2 million homes contributes to those targets.

As we have seen above there are a wide range of retrofit activities in Greater Manchester. These are promoted by a wide range of interests that are both public and private, operate at national, regional, urban, community and household scales and who often work together in partnerships – either longer-term or for the duration of an initiative. In this section we examine two emergent pathways for urban retrofit in Greater Manchester:

1. One being a dominant national/city-regional policy and business led view of the relationship between Greater Manchester and retrofit which is 'top down' and can be characterised as retrofitting ON Greater Manchester.
2. Second is a range of community and embedded activities within Greater Manchester which is 'bottom up' and which can be characterised as retrofitting IN Greater Manchester.

6.1 Retrofitting ON Greater Manchester

In terms of the low carbon agenda generally and retrofit specifically these dynamics are visible in the development of the dominant representation of retrofit in Greater Manchester where these agendas are concerned with positioning the city-region externally. What this means is that Greater Manchester is presented and discussed as a low carbon first mover to attract inward investment and where the function of governance is to promote Greater Manchester in this way and to provide business support in relation to this

agenda. Underpinning this is the logic of the low carbon agenda being one that extends the economic development agenda of post-1986 governing into low carbon 'entrepreneurialism' and the opportunities this affords. The narrative headline that supports this is that this will help avoid the economic costs of inaction on climate change and allow the city-region to move rapidly to accrue the economic opportunities and benefits (Mini-Stern). In one estimate, effectively addressing climate change in the city-region over the five year period of Greater Manchester being a Low Carbon Economic Area will contribute to saving 6m tn of CO₂, 34,800 jobs and be a demonstrable exemplar for the wider region and the UK (LCEA).

This broad view is promoted by a number of plans and strategy documents from the Mini-Stern to the Sustainable Energy Action Plan and the Low Carbon Economic Area (LCEA) for the Built Environment. These are often plans being promoted by a small number of interests and often doing so as a test-bed for national targets. The LCEA designation for Greater Manchester in 2009 required Greater Manchester commissions working with national government departments (Department for Business Innovation and Skills, Department for Energy and Climate Change), national agencies (Carbon Trust, Energy Savings Trust) and the regional development agency (NWDA). Yet with this five year programme there was no specific government funding despite it being the basis for experimenting with how to create and shape markets and low carbon goods and services and to address national targets and programmes in doing so.

Additionally, the developing context nationally is one of 'austerity' governance. The dominant political priority is one of post-financial crash deficit reduction. This means cuts in public spending. Alongside this the UK coalition government, in office since May 2010, has worked to strip out significant aspects of existing sub-national governing architecture – particularly regional development agencies (RDAs), but also other national agencies with responsibilities for urban areas. The coalition has replaced RDAs with local economic partnerships (LEPs) which are an effort to intensify the economic development remit of RDAs. Significantly, there are many more LEPs (38 announced by January 2012) than RDAs (9 in England) and there has been a reduction in funding from the annual RDA budget (around £1.4 billion a year in 2010) to a new regional growth fund (originally around £1.4 billion over 2 years when it was announced in 2010 which was increased to around £2.4

billion in 2011). This means there are more spatial units competing for less funding. The issue here is one of austerity and sub-national restructuring underpinning the intensification of geographical competition.

Urban Retrofit, as the discussion above illustrates, can be understood in numerous different ways. In this section we detail one attempt, but a dominant attempt, to constitute an urban retrofit agenda in Greater Manchester. To do this we detail the 'Greater Manchester approach' to urban retrofit, the pressures to develop such agenda, and how the GM approach has been and is being constituted. To understand this we detail processes of governing retrofit in GM and their part in constituting the GM approach and being constituted by it. We then go on to outline practical attempts to translate this approach into tangible actions.

6.1.1 The Greater Manchester Approach

The broad governance history of the development of the retrofit agenda in Greater Manchester, through the LCEA and going back even further has been set out above. Within this context the current state of Greater Manchester plans for a retrofitting agenda can be seen in the draft GM Low Carbon Housing Retrofit Strategy published in [check] October 2011. The historical politics of Greater Manchester over the last three decades or so can be seen in the ways in which the retrofit agenda is seen as:

1. Retrofit as an emissions reduction strategy: In reducing emissions in relation to Greater Manchester's carbon reduction emissions targets in a broader national context.
2. Retrofit as first mover and to attract investment: As a way of achieving 'first mover' economic status and positioning Greater Manchester as leader in an emerging UK retrofit market. In doing so the development of a retrofit agenda is seen as a way to attract private investment to the city-region.
3. Retrofit is therefore being positioned as being about green growth: As about job creation, skills development and product innovation.
4. Retrofit GM as a national test-bed: As a means of aligning with national retrofit programmes such as the Green Deal, implementing national programmes, doing so to achieve national standards such as Energy Performance Certificate (EPC) ratings and to

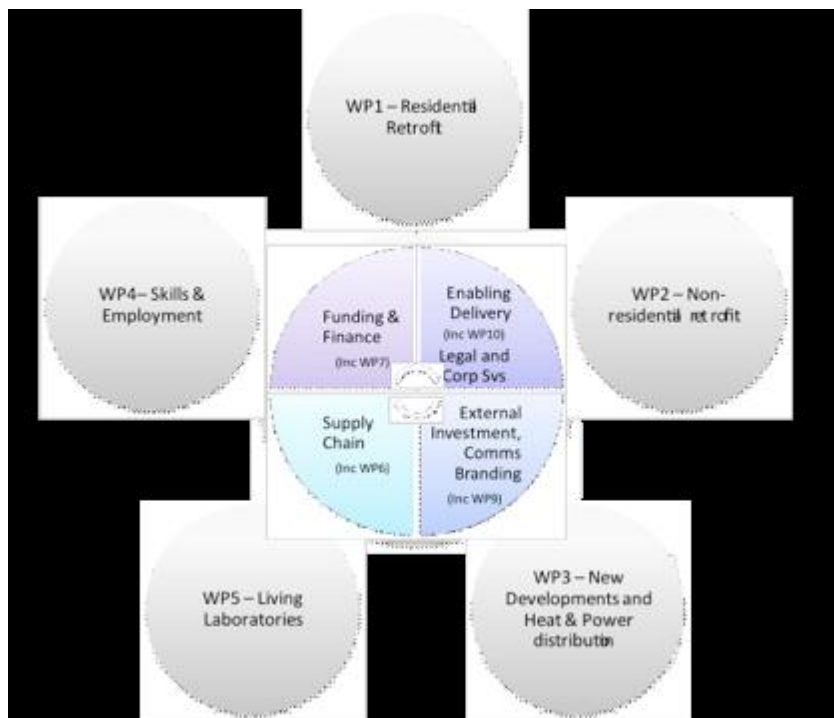
access associated national resources and subsidies such as through the Feed in Tariff (FiT), Renewable Heat Incentive (RHI) and the Energy Company Obligation (ECO).

5. Retrofitting to address fuel poverty and improve wellbeing: To improve existing homes, streets and neighbourhoods and the effectiveness and efficiency of the existing building stock, to create attractive places to live as part of a commitment to improving well being and also to address fuel poverty.
6. Retrofit, on the one hand is seen as being about the reconfiguration of the built environment through a suite of technological interventions. ... Yet there is a differential geography to this across GM.
7. Retrofit is also seen as requiring behavioural change...
8. Retrofit is seen as requiring demonstration and communication: The demonstration of tangible products such as large scale technologies, the reconfiguration of show houses and exemplar properties is an important part of GM retrofit. Communication...
9. Retrofit as market making: The dominant message of retrofit in GM is that it is about the making of new markets. That is it is about governing GM to make it amenable to the market opportunities afforded by retrofit.

6.1.2 Making Retrofit Markets in Greater Manchester

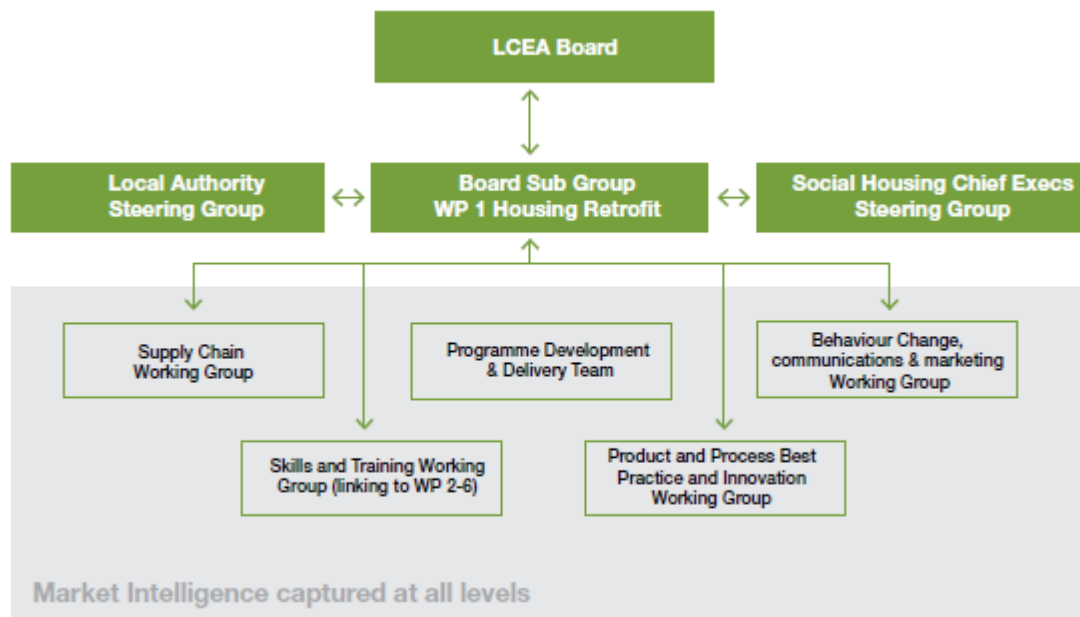
Markets are frequently seen to be about production, consumption, and competition. In making markets it is attempts to try and bring order to and organize these three aspects that provides a critical focus. In efforts to create a market for retrofit in GM there are seven interrelated issues that it is important to understand in terms of the organization of production, consumption and competition:

Figure 2 The creation of a new framework for governing GM and for governing GM retrofit.



The dominant Greater Manchester approach to retrofit has a central place in it for new governance structures. This understanding of governance is layered in that the substantive focus of retrofit is organized in relation to five work packages. These work packages bundle together residential properties for retrofit (WP1), non-residential retrofit (WP2), new developments, [technologies] and heat and power distribution, the development of skills and employment (WP4) and the experimentation in action of retrofit in Living Laboratories (WP5). These work packages and their substantive focus rotate around work packages that address funding and finance, supply chain development, external investment and branding and delivery and legal and corporate services (see Figure 2). The development of these different work packages is variable. By far the most well developed is Work Package 1 (WP1).

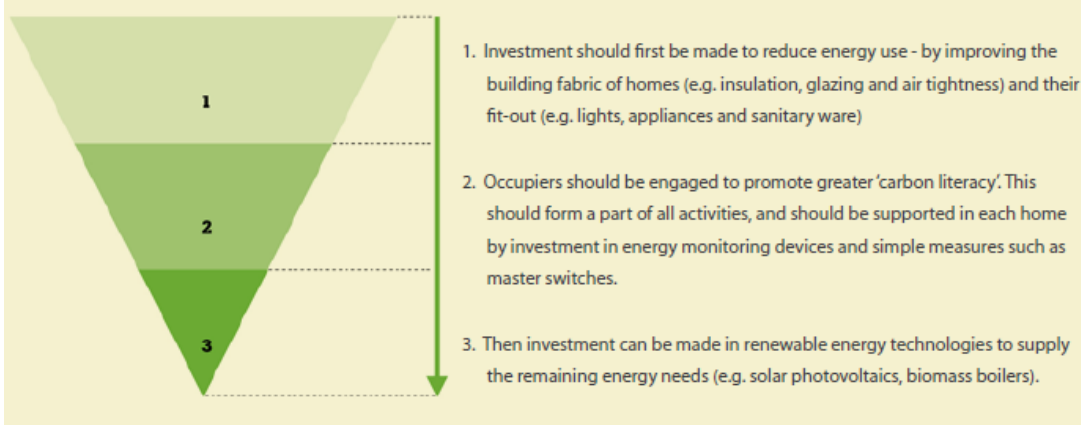
WP1 has a set of governance arrangements that illustrate yet another layer of governing arrangements. These arrangements are diagrammatically represented below. Particularly important here is the Board Sub Group for WP1 was has sought to develop a common framework and standard for retrofit.



6.1.3 Bundling up types and sites of buildings.

The dominant Greater Manchester approach has a threefold hierarchy of responses, that are characterized as 'fabric first'. This approach involves prioritising (1) improving the built fabric of homes through measures such as insulation, glazing and air tightness and also of appliances and fittings within buildings such as lighting and appliances. It also means (2) more 'carbon literate' home owners which involves the monitoring of energy in homes and the installation of switches. The final part of the hierarchy requires (3) filling any energy gap with investment in new forms of renewable energy generation, including through solar photovoltaics and biomass boilers.

Fabric first!
The GM energy hierarchy approach



This hierarchy has been developed as a framework for addressing the application of bundles of retrofit measures to different 'types' of households. The LCEA WP1 has a Retrofit Standards sub-group which had articulated nine different housing archetypes within Greater Manchester. The different types of housing are then matched against packages or bundles of retrofit measures 'that can be more easily communicated, and installed simultaneously to minimize household costs and disruption' (LCHRS).

6.1.4 The dominance of technology-based responses.

Cutting across these different housing types are packages or bundles of Basic, Intermediate and Whole House packages. The idea here being that a set of basic interventions address carbon emissions reductions and are used to cross-subsidise other measures, such as solid wall insulation, that may be effective in reducing emissions but where profits may be lower. There is some understanding here of a requirement to tailor or adapt retrofit interventions to different household contexts. The sub-group has characterized basic measures as including roof insulation, cavity wall insulation, draughtproofing and ventilation improvements. Intermediate measures include roof insulation, cavity wall insulation, new doors and windows, heating systems and controls, draughtproofing and ventilation improvements. Major measures include solid wall insulation, floor insulation, detailing to reduce cold bridging, and micro-generation technologies. One can see that the focus on buildings and technologies to be installed within them, on them or outside of them dominate this response. This is the case rather than starting from the point of view of what kinds of activities take place with these houses. The assumption is that the buildings are

the problem, the technologies are the solution and that what goes on within houses can be 'black boxed'.

6.1.5 Constructing modes of financing retrofit.

This packaging of retrofit measures raises the issue of where the finance for such measures will come from. The Strategy estimates that domestic retrofit in Greater Manchester over the next 10 years could require up to £27bn of investment. Yet the broader context is one where a long period of austerity governance is likely to predominate in the UK and where public finance to underpin such developments is likely to be limited. As an emerging funding milieu there are numerous attempts to build relationships between Greater Manchester organizations and providers of finance and investment. The Low Carbon Housing Retrofit Strategy outlines potential sources of raising finance that includes through bond issue, institutional finance, government finance, bank debt, social financing and private equity (see table 2).

Table 2 Financing Retrofit in Manchester

Characteristics	Bond issue	Institutional finance	Governmental finance	Bank debt	Social financing	Private equity
Description	Capital generally raised from Institutional investors	Pensions funds and Insurance companies	European Investment Bank and Green Investment Bank	Private investment banks (structured finance) and high street banks (personal loans)	Building societies, re-investment trusts, dedicated share issues and revolving funds	Private capital, mezzanine finance, subordinated loans
Term of finance	Wide range 5 to 50 years	Term matches lifespan of the asset, typically 5-25 years	Term can match that of matching financing	Up to 25 years	Defined by projects and mortgage terms	3 to 5 years
Cost of capital	1% to 5% over Gilt	0% to 10% over Gilt or EUROBOR	0% to 3% over Gilt or EURIBOR	1.5% to 10% over LIBOR	Dependant on project structure	4% to 15%
Minimum investment	> £50 million	> £200 million	£10m to £500m	up to £25 million	Variety of scales	Variety of scales

Table 5.1

From the view of the Low Carbon Housing Retrofit Strategy there is an attempt to try and understand how potential investors view the domestic retrofit agenda. Inherent in this is a view of making the city-regional context amenable to inward investment. In summary the understandings of investor perceptions set out in the Strategy suggest that large-scale investors that are required for a domestic retrofit programme see the field of domestic retrofit as 'complex and risky', that institutional investors, particularly pension funds, require confidence of stable returns and that there is a key role for local authorities and

social landlords in 'de-risking investment opportunities by demonstrating...a track record in delivering programmes [and]...an ability to attract subsidies'. The role of public bodies in this reading is one of promoting the development of market opportunities for finance capital.

From this the Strategy sets out three options for forms of financing for domestic retrofit. These are (1) on the basis of prudential borrowing and bank debt. This relates financing to particular projects and pilot programmes. The Strategy cites numerous exemplars of such an approach – these include programmes in Germany and Birmingham and Kirklees – where finance will be sought through 'prudential borrowing' from commercial banks, and Green and European Investment Banks. Wrapped into this financing are security mechanisms such as contracts (Feed-in-Tariffs and the Renewable Heat Incentive), repayment schemes (Green Deal) and ECO funding, subsidies (via ERDF, Decent Homes Backlog, LSVT programme) and debt recovery (through a Local Authority Registered Provider or the Green Deal).

A second option is through community and mutual finance which the Strategy points out is already the subject of a pilot in Manchester. The community investment mechanism is 'tried and tested' in other sectors and settings. The Carbon Saving Society, Low Carbon West Oxford, the Brighton Co-operative and Reading Climate Change Partnership are cited. The first of these is based in Manchester and is trying to raise £2.5m over three years. The mechanism operates on the basis of community equity or local bonds financing community renewable installations that trigger guaranteed income through contractual arrangements via the Feed-in-Tariff and Renewable Heat Incentive schemes that is reinvested in household retrofit alongside other mechanisms such as Green Deal. In this sense there is again a relationship between financing, provided by member investors and commercial bank debt and contracts, repayment mechanisms and also debt recovery. The Strategy outlines the potential for a domestic retrofit Building Society but also lays out the challenge of the significant start up capital (c£1m) required for this.

A third option deals with institutional investment. This option is characterized as requiring national government initiatives including Green Deal, PAYS, the Feed-in-Tariff and Renewable Heat Incentive to have 'achieved sufficient momentum' and therefore a degree

of stability in terms of risks for institutional investors – such as pension funds, life assurance companies and commercial banks - in investing. The kinds of programmes that are cited as exemplars include A Shade Greener (Yorkshire) and British Gas (Home Energy Plan). The mediators of such finance for domestic retrofit are set out as including utilities, Local Authorities, social landlords, contractors and social enterprises and there is again a requirement for securitization through contracts such as the Feed-in-Tariff and Renewable Heat Incentive and debt recovery mechanisms.

One can see from these options that there is an active role envisaged for local agencies – here potentially The Combined Authority of Greater Manchester and the Local Enterprise Partnership (LEP). This is in a role that can be characterized as embryonic market makers in that they actively work to bring together different forms of finance in terms of private investors, public mechanisms and contracts and the security of funding and payback mechanisms through combinations of pump priming, coordinating co-financing to attract high up-front capital costs to different social, technical and built contexts, to demonstrate mechanisms for payback and profit over time and to tie in public contracts and incentives into doing so..

Yet there is not only a geography to financing but also a class politics. Limited public funding is likely to mean that private finance that overrides public priorities will raise questions about how socially deprived communities and neighbourhoods become attractive to such forms of investments, how politicians and decisionmakers can actively shape contexts for investment, in contexts which may contain significant number of individuals with poor credit ratings; in short, where the basis for organizing finance as individualized credit and the mechanisms for doing so may confront ‘uncompliant’ consumers. Alternatively, how are neighbourhoods and communities able to organize to attract or generate investment in a wide variety of neighbourhood contexts? These issues are addressed in a little detail in the strategy.

6.1.6 Buildings skills and supply chains.

A central element of the retrofit agenda in Greater Manchester is to develop a low carbon economy that creates employment, that opens up opportunities for existing industry and

that requires the development of a supply chain and associated skills to address the opportunities that the retrofit agenda is seen to open up.

In this respect retrofit can be seen as being about 'employment creation and the GVA potential for this sector of the GM economy' where what is required is 'the creation of sustained demand for low carbon housing retrofit products and services and the development of a Greater Manchester supply chain and capacity within the construction industry to then meet this demand' (LCHRS). The 'economic benefits' envisaged have been set out in numerous documents, including the LCEA Joint Delivery Plan and the Mini-Stern Review. These benefits are characterized in terms of the jobs the retrofit agenda will support (34,800 in total, including 18,000 in the supply chain) and direct Gross Value Added of 'up to' £650m.

Yet as the Strategy alludes to, a common understanding of the relationship between the existing industrial base and its ability to adapt to the possibilities of retrofit needs developing. As part of the LCEA, 'initial work' has been undertaken to do this by K Matrix who have set up a database to 'target companies'. The Strategy also sets out the need for codifying industry knowledge on how to undertake retrofit across its range of housing archetypes; so that as more retrofits are undertaken 'knowledge will quickly grow and develop' and can be usefully detailed and shared through a retrofit pattern book of best practice 'which could include case studies, products, details and installers related to different archetypes'. The 'functions' of supply chain development are seen to be about: 'Scanning the market for new and existing products...Defining future need for products and/or product improvements...Arranging testing and accreditation for new and existing products if required...Developing partnerships with potential suppliers and Manufacturers...Partnering with manufacturers to invest in new products and production capacity'.

But there are important issues that this raises in terms of the kinds of institutional framework that is necessary to mediate between existing industrial interests and their *ability* to engage with the retrofit agenda. That is to say, actions that are less benign than a database and more ambitious than a potential 'supply chain development group and product quality board' and that integrates other parts of the emerging institutional

architecture (e.g. the LCEA retrofit standards group and the proposed LCEA Centre of Excellence) are required to understand the bases of interactions between existing industrial concerns and retrofit opportunities. There is also a need, as the strategy recognizes, to build on existing capacity and where there could be a 'significant role for social enterprise in the construction sector, embedding benefits in the client community'. This includes the development of skills within these concerns, the building of appropriate relationships between them and the setting up of appropriate skills providers, information providers and forms of finance to make the retrofit agenda relevant and attractive to them.

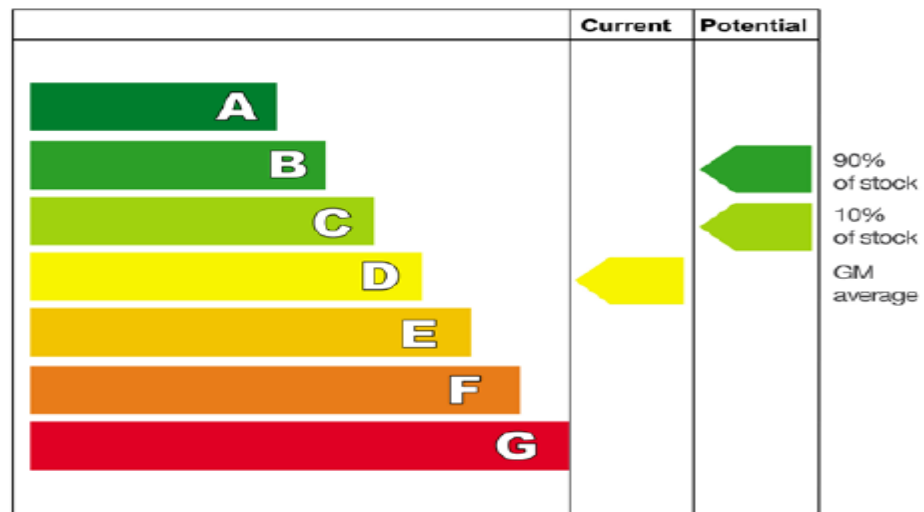
6.1.7 Creating and incorporating standards, and assessing, monitoring and measuring retrofit.

Of course, a central issue is creating a common understanding of what retrofit in context means. The Domestic Retrofit Standards Sub-Group of the LCEA programme has sought to develop a framework to establish standards and also to set targets. The effort to establish standards, as a precursor to modeling common housing types and what forms of RDSAP and EPC ratings are required to meet 2020 and 2050 national emissions targets, has a number of strands which has included the characterization of nine major archetypes deemed to be representative of the dominant forms of Greater Manchester housing stock, and packages of (Basic, Intermediate and Major) retrofit measures that are likely to be effective – in terms of energy savings, emissions reductions and running costs – in achieving standards in different archetypes.

There are limits to the discretion of city-regional decision-makers in framing standards in that there are pressures to incorporate or align with the priorities of the Green Deal and other national programmes such as the Technology Strategy Board's (TSB) 'Retrofit for the Future' programme. There is thus an explicit effort to align 'Greater Manchester's domestic carbon trajectory' with Green Deal assessments (LCHRS). One consequence of adopting the EPC rating scheme as a standard is that it allows the calculation to be made that 'the majority' of the city-region's post -1919 properties – which account for around three-quarters of the city-region's housing stock – and 'at least' 40 per cent of its pre-1919 stock need to 'work towards' this standard (LCHRS). See figure 3.

Figure 3 Proposed Greater Manchester EPC Targets

Figure 3.1
Proposed Greater
Manchester EPC
Targets



Source: DCLG

Source: DCLG [in LCHRS]

The standard modeling of domestic energy use and emissions – including taking form of construction and insulation in to account - is by the Standard Assessment Procedure (SAP). Variants of SAP have been used but with significant inaccuracies in assessing EPC bands. This has led to recognition of the need for using SAP or an updated version of a SAP variant being developed as part of the Green Deal to build trust and reliable assessments of the effects of the retrofit measures and packages being installed.

6.1.8 Developing, piloting and demonstrating

The making visible of retrofit and of demonstrating its value in practice has and in ways that build a wider resonance of the agenda has been recognized by the Behavioural Change Sub-Group, which has highlighted exemplar marketing campaigns and the need for developing the role of Green Deal Assessors as intermediary agents to ‘communicate the full range of benefits that retrofit could bring’ (LCHRS). Furthermore, visual thermographic imaging techniques to communicate the potential benefits of retrofit are promoted.

The trialling and demonstration of marketing techniques, although taking place within the city-region, are often supported through national funding and programmes such as EEC, CERT and CESP and the Heat Seekers, through EU funded initiatives such as Smarter and DEHEMS in Manchester that have field trialled energy monitors with 150 households linked to a web-based database and local authority and such as Home improvement loans, landlord accreditation schemes, university-local authority research on attitudes and motivations to energy efficiency.

Additionally Greater Manchester decision-makers highlight – and objectify and make tangible - demonstration initiatives such as The Carbon Co-operative and Carbon Saving Society, retrofit projects such as Northmoor in Longsight (Manchester) and Decent Homes programmes that have focussed on whole house energy efficiency. It is unclear whether this development of a network of tangible, objectifiable projects move beyond objectifying the product, and framing the solution, to understand about and learn from the processes involved in retrofitting.

6.2 Retrofitting IN Greater Manchester

In contrast to the retrofitting ON approach, there are a wide range of projects, initiatives, schemes around 'retrofit' in Greater Manchester. Many of these rather than being part of top down schemes or programmes emanate within communities. That is not to say that there is no policy involvement – as there may be through, for example, national or city-regional funding schemes – but it is to say is that these initiatives are largely developed by neighbourhood or places based groups, organisations, businesses and collections of individuals. This includes, for example, initiatives such as Bollington Carbon Revolution and Barton Village.

By 'bottom up' we are talking about initiatives that primarily emerge from and are developed in particular neighbourhoods, organizations or places to meet, or at least try to address, the motivations of groups of local interests and people. They are in some sense motivations that emerge from local contexts and that seek to reconfigure in local contexts. They are embedded in local contexts.

Given this the motivations for involvement in embedded retrofit activities in Greater Manchester range from those that seek to:

- Promote economic development through carbon reduction;
- Reduce the carbon footprint of a town, and promote 'sustainability';
- Use the retrofit agenda as vehicle for education, out reach and building refurbishment;
- As part of wider processes of building community engagement.

Motivations for embedded retrofit and community engagement are manifold. What is clear is that the concept of community cannot be understood in its singularity. Within and across places communities interact and interrelate.

1. On that basis embedded responses take place in a *diversity of contexts*. Communities, neighbourhoods, organisations and business within a context have their strengths and weaknesses.
2. The *different level of capacities* can be very wide ranging. This means that some groups are starting out from scratch, who have simply a concept, and other groups may have many years of experience. They may also have financial, planning and other forms of expertise that newcomers may not.
3. There is thus a *broad range in scale and scope of community retrofit initiatives* in Greater Manchester – some functioning, some in the planning stages and others as potential in the future. Some are small scale micro generation of behavioural change initiatives whilst others integrate a range of responses at a community scale.
4. Yet there is often a common view in Greater Manchester embedded retrofit initiatives about *making communities relevant again* – this is a view of trying to recover something that has been felt to be lost. In that respect this can often be seen as an antidote to the prevalence of top down initiatives.
5. Yet the *triggering of community, embedded initiatives* requires individuals disposed to doing so. In the case of community initiatives in Greater Manchester this has often involved

individuals with a long personal history working on ‘sustainable development’ type issues for a number of years

6. Embedded, community retrofit has in many ways been about *giving voice to community* and *empowering* them through the development of, for example, renewable energy as a real opportunity for members to shape their own future and not only in a low carbon sense but in an economic sense as well.
7. This means that community retrofit is often about both *energy generation, conservation and the generation of income* through micro generation projects in village halls and community buildings and income generation through larger wind or hydro turbines. But there are frequently significant development costs with these initiatives.
8. Constraints of capacity can mean that a challenge for community retrofit is *limited resources* which requires *finding new ways of working*.
9. One response is to find effective ways of *connecting retrofit communities* and the creation of organizations and mechanisms to do so. This is a means of addressing community isolation through sharing information and through connecting communities that don’t have specific resources with those that do.
10. This highlights something of the *limits to bounding community responses* with communities often actively having to cultivate networks of financial and other forms of expertise and knowledge and other forms of support including emotional support.

6.3 Understanding Retrofit ON and IN

The dominant characterisation of retrofit in Greater Manchester is the top down retrofitting ON Greater Manchester. There is significant retrofitting IN Greater Manchester, although this is less prevalent in wider public debates. The table below summarises the key aspects of retrofitting ON and IN.

Retrofitting ON		Retrofitting IN
‘Top down’	APPROACH	‘Bottom up’
Primarily economic development and positioning	MOTIVATIONS	Manifold – economy, community engagement, security, voice
National priorities and local capacity and priorities in asymmetric relation	NEGOTIATION	Small numbers of disposed individuals or groups in each initiative – working to accrete capacity
Making retrofit markets – demonstrating national priorities	AIM	Building embedded capacity – achieving local values
Translating into embedded capacity	CRITICAL CHALLENGE	Connecting to other communities, funding and forms of capacity
Narrowly constituted elite	GOVERNANCE	Multiple, fragmented initiatives

7. Conclusion - Towards Retrofitting WITH Greater Manchester?

There are strengths and shortcomings of both retrofit ON and IN approaches. The challenges faced by the top-down retrofitting ON agenda are recognised, often even among those involved in enacting it. In particular, some national policymakers are very aware of the asymmetrical dynamics involved in top down retrofitting and what this has led to. To take one important example, this results in strong policy aspirations that it is difficult to translate into tangible actions:

“The policy goal is one of the strongest in Europe, but there is a massive implementation gap due to the governance systems in place in the UK” (national policymaker A).

This creates the conditions for short-term responses and limited learning:

“There is a lack of consistency in structures that exist to implement projects and activities, with short termism existing both in projects and the structures created to supply those projects. This also prevents the collection of results in terms of what works and more importantly what does not work; no project ever fails” (national policymaker B).

Among sub-national officials and policymakers this short-termism is all too apparent. Its effects are seen in lack of funding and retrofit activity that is more or a ‘repair and maintenance’ approach than systemic in orientation:

“The council has tended to lack the funding for systemic retrofit activities of its housing stock, with large structured investments more sporadic and emergency and essential repairs being more common” (local official A).

Within top down approaches, where local and city-regional decisionmakers are often trying to anticipate national priorities, there is also often a feeling of uncertainty based on the often transient nature of political priorities nationally:

“I’m not sure how long the LCEA will last, as long as it has the support of high profile local political actors” (local official B).

There have additionally and importantly been cultural issues in trying to get social interests who often haven’t worked together to do so:

“The effort has been in getting everyone to cooperate” (local official C).

One consequence of this short-termism and uncoordinated responses is that the knowledge base for understanding retrofit development over time remains fragmented:

“There is a lack of data across a number of areas, which prevents a better understanding of the true costs and benefits for development” (local official D).

With retrofitting IN approaches there is also a broad recognition of a set of problems. The need for coordination between different community and neighbourhood initiatives is recognized but so are the difficulties of this:

“There is a lot of misunderstanding, mistrust, lack of information and misinformation around the retrofit activities (retrofit in its broadest interpretation)...” (community group A).

There is also an appreciation often that historically these kinds of initiatives have not been as bounded as is often thought:

“Community groups have to interact with planners, MCC, contractors etc” (community group B).

But that this relative permeability of community groups means that there are dependencies created in relationships with funders and other sources of resources. Given the broader context of austerity governance this, then, has potentially significant consequences for retrofitting IN approaches:

“There has been a significant reduction in the amount of funding that is being made available. The reduction in funding and subsequent high profile activities has reduced the number of people interested in participating in activities, people can be fickle...When changes happen in people’s lives, the voluntary activities are the first to go” (community group C).

Issues of funding and cultural obduracy in finding new ways of coordinating and working together are also recognized by business interests in the wider context of retrofit in Greater Manchester:

“The funding regime for activities is time dependent. Sources of funding includes the EU and national government. This means that project type activities are undertaken. This limits the activities being undertaken, creating a project focus for activities which can result in numerous pilots” (business A).

“Participation from different actors is limited” (business B).

These strengths of shortcomings of both retrofit ON and IN approaches means that the retrofit agenda and what needs to be done in relation to it in Greater Manchester can be summarised in terms of three issues that create the possibility to move from retrofit ON and IN to retrofit WITH:

1. Retrofit ON is produced through complicated, elite and deficient multi-level governance arrangements. There is the dominance of national policy in the city-region; the dominance of a narrow strategic view within the city-region of how that national dominance is responded to. There is also limited, connected and effective capacity to implement city-regional strategic priorities.

2. Retrofit IN includes a rich and broad array of relevant social interests to this agenda but with limited interconnections to each other and beyond. It is relatively disconnected from the dominant city-regional agenda; there are poor connections and understanding between many of these initiatives and the short-term nature of funding mechanisms and funding streams support atomisation and episodic projects.
3. Through retrofit WITH there is a need to create a willingness for more engagement between city-regional policymakers and this rich array of community interests. There needs to be a better understanding of the range of interests and activities that could enrich this agenda. There is a need for practical manifestations of this through tangible activities and mechanisms.

DRAFT

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