

Practice-based learning in cities for climate action: A case study of mission-oriented innovation in Greater Manchester

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Executive Summary

Cities and urban areas are responsible for more than 70% of global carbon emission. Although the national and international spheres of policymaking frequently receive the greatest amount of attention on climate change, solving the climate crisis is significantly dependant on action at the local and regional levels. Cities around the globe have increasingly recognised their impact on the climate crisis and have begun raising their ambition to take action. This paper analyses the innovative approach taken by one local government organisation – the Greater Manchester Combined Authority (GMCA) – to solve the challenge at the city-regional scale. We begin by analysing mission-oriented innovation theory and exploring its particular relevance as a local government roadmap approach for addressing the climate crisis. We then examine how this approach has been applied by GMCA, based in the North West of England, to achieve its carbon neutrality ambitions. We employ a qualitative methodology, centred on key-stakeholder interviews and ‘practice-based theorising’, a process of co-designing, testing, and experimenting with new theories alongside policymakers. Finally, we explore how the approach has been governed, mobilised different finance streams and implemented using different ‘powers’ and ‘roles. Through the analysis of GMCA’s mission-oriented approach to clean growth, we find that particular skills, capabilities, resources, and capacities are required if cities are to use this form of innovation policy to achieve a green transition.

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1. The green transition at the city level

Cities and urban areas sit on the frontline of the climate crisis and are central actors for solving the challenge. Cities account for over 60% of direct global carbon emissions and will need to rapidly decarbonise if society is to keep global temperature increases below 2°C, the upper limit set in the 2015 Paris Agreement (Harris et al. 2020). Although cities are responsible for the majority of global carbon emissions, they make up only 2% of the earth's landmass, despite the trend of rapid urbanisation over the last several decades (Kim 2018). While there is a wide range of estimated financial implications of climate change for cities, studies have found that the damage of climate change to urban infrastructure and the resulting impacts on productivity will likely cost cities globally tens to hundreds of billions of US dollars annually (Rosenzweig et al. 2018). Given the relationship urban areas have with the climate crisis, cities are a critical venue for policy experimentation to drive the green transformation.

Climate change is a complex 'wicked problem' that requires navigating inherent and intrinsic challenges: it is in a domain characterised by non-linear processes, systemic in nature, interconnected with unpredictable feedback loops and tipping points, and requires urgent large-scale action (Kattel et al. 2019). Solving the grand challenge of the climate crisis requires new forms of innovation across society, technology and governance to stimulate a systemic 'green transition' – the pathways of change needed to evolve beyond contemporary fossil fuel-based economies to sustainable, zero-emission economies of the future (Elzen et al. 2004). Framing this shift as a transition is significant, demonstrating that the intended shift will be reached over a prolonged period of time through sustained, deliberate action requires market-shaping policies, and demands significant governance capabilities to convene and coordinate complex stakeholder networks (Elzen et al. 2004).

Facilitating the green transition at the urban scale of governance can be conceptualised through different 'roadmap' approaches. Roadmaps can be understood as a model designed to demarcate a long-term process for how a distant target, such as carbon neutrality, may be achievable in a context of uncertainty and where conditions – social, technological, political and economic – will inevitably change. Without a roadmap designed specifically for complex systems, urban areas will be unable to support and facilitate the forms of collaborative investment and innovation activities between discrete actors required to successfully address distant targets in contexts of fundamental uncertainty. Moreover, urban areas attempting to prompt green transitions demand roadmaps to provide long-term, enduring pathways that can provide stability beyond political cycles or narrow private investment horizons.

There are several existing roadmaps that cities have begun using to support their green transition ambitions. For example, the doughnut economics framework is one form of roadmap that was developed to ensure both people and planet can thrive (Raworth 2017). Cities such as Amsterdam have recently begun to use the doughnut economics roadmap to facilitate the green transition by shifting public sector priorities away from growth toward thriving – orienting the local economy's purpose to provide wellbeing for people rather than wealth expansion. The roadmap establishes guardrails that serve as decision-making criteria, demanding that action is aligned with long-term ecological and social values. Doughnut economics can provide cities with a roadmap for

achieving a long-term goal through a framework that is open and resilient to unforeseen future scenarios, as it gives flexible guidance rather than fixed rules. The drawback of doughnut economics as a roadmap for urban climate action is that it provides guiding principles rather than a defined pathway to shape innovation activities.

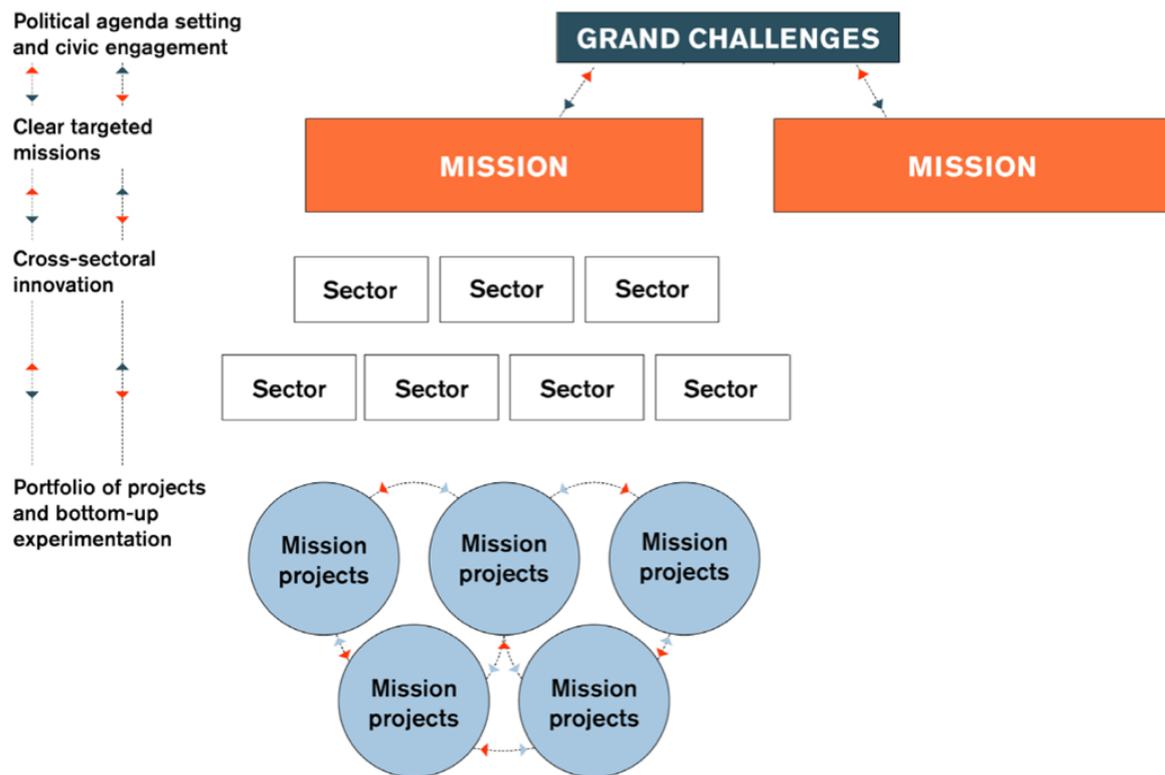
Cities aiming to curb their carbon emissions and facilitate a green transformation require approaches that can support systemic transformation, tilting the full innovation chain towards a bold yet defined direction and crowding in activity from a wide range of stakeholders. In this report, we explore *mission-oriented innovation* as a roadmap approach for cities designing robust climate action policy ambitions. The report proceeds as follows: section 2 defines mission-oriented innovation and explores the theoretical dimensions of the approach to innovation; section 3 conceptualises missions to the local level of policy development in the context of climate change; section 4 synthesises the development of Greater Manchester's mission-oriented approach to clean growth; section 5 explores and analyses the governance, financing and authorities used to implement Greater Manchester's mission; and section 6 provides conclusions for other cities and urban areas.

2. How to select missions

Missions seek to address societal *grand challenges* – challenges that are distinct from traditional policy problems in three distinct ways (Ferraro, Etzion and Gehman 2015). First, they are complex, characterised by a system of many non-linear interactions, where those addressing them engage with only a small range of actors involved in the wider web of relevant activity, creating competing priorities and making them difficult to alter. Second, grand challenges are much more uncertain than traditional policy problems, forcing policymakers to imagine an unpredictable future within which long-term strategic planning is required for steering change. Finally, grand challenges are evaluative – there is no one 'correct way' to understand them, leading to different interpretations of the nature of the problem's underlying conditions and divergent understandings of what an acceptable solution might be, requiring close coordination across multiple disciplines and sectors to evaluate and address them.

The UN's 17 Sustainable Development Goals act as global grand challenges. To make these challenges achievable, they have to be broken down into pragmatic components. These global challenges have been framed as missions – a series of 169 concrete targets with 231 appraising indicators that act as stimuli for innovation. While grand challenges are, by their nature, difficult and complex issues, missions are more specific, coordinating public and private actors to tackle particular societal problems through mutualistic collaborative responses. Missions are not constrained by traditional sector or political boundaries – they enable existing silos to be reframed and overcome. Furthermore, missions address grand challenges by setting out a new investible universe and crowd in private investment through ambitious, high-profile, long-term directions of travel.

Figure 1. From Challenges, to missions, and projects



Source: UCL Institute for Innovation and Public Purpose

Mission-oriented innovation encompasses a range of policies aimed not at subsidising sectors or picking winners, but incentivising the willing, providing focused policies that reward investment and innovation in service of a defined public need (Mazzucato 2018). This enables governments to steer economic growth towards defined public value, rather than leave direction (or lack thereof) to the market (Kattel and Mazzucato 2018). Importantly, a mission is not an individual R&D or innovation project – much like venture capital spreads investments across a range of businesses, missions-oriented innovation comprises a broad portfolio of competing and complementary projects, united around a well-defined goal. Mission-oriented innovation has been inspired by a generation of technological missions in the 1960s, such as NASA's Apollo mission to put a man on the moon by the end of the decade.

Solving today's challenges requires going beyond the technologically focused innovation of the space race missions. Today's missions demand recognising and unpacking how socio-economic issues intersect with politics and technology. For example, the Energiewende policy in Germany is a defined mission with a specific target to reduce carbon emissions over a bounded period of time, aimed at tackling the broadly defined challenge of fighting climate change (Mazzucato 2018). This has required many sectors, including traditional ones, to transform themselves. The German steel industry, for example, has lowered its material content through a transformative policy that required repurpose, reuse and recycling activities. While the moon landing mission was set top-down through political leadership, the German Energiewende was the result of bottom-up green movements, which culminated in political understanding and eventually leadership from

above. Today's missions require citizen engagement and consensus-building, combining the need to set directions from above with processes of bottom-up experimentation from below.

Sustainability and green growth missions similarly require many different sectors to rethink themselves, and to work together in dynamic and interconnected ways. By setting the direction for a solution, missions do not specify how to achieve success or where it will come from. Instead, missions allow us to guide innovation by multiple actors across multiple sectors, aligned behind a common goal. There are five criteria that are applicable to selecting missions (Mazzucato and Dibb 2019). One, missions should be bold and inspirational with wide societal relevance. Two, missions set a clear direction through very clear framing that provides targeted, measurable and time-bound targets. Three, missions set an ambitious goal that requires taking risks and feedbacks across the innovation chain, but is also realistic. Four, missions should be framed in such a way as to encourage cross-disciplinary, cross-sectoral and cross-actor innovation. Five, missions should involve multiple, bottom-up solutions rather than be achievable by a single development path or technology.

3. Missions at the urban and city-region level

There are a growing number of organisations that have become interested in mission-oriented innovation policy. For example, at the EU level the Horizon Europe programme set five grand challenges to direct the continent's research and innovation agenda (Mazzucato 2019); at the national level the UK's Industrial Strategy of 2018 set out a mission-oriented approach to tackle the grand challenges of clean growth, aging, mobility and AI (BEIS 2019; MOIIS 2019); a mission-oriented framework has helped structure the new Scottish National Investment Bank (Mazzucato and Macfarlane 2019); and the government of Italy is considering how mission-oriented policymaking could be applied to the digital transformation, the green transition and the health system (Mazzucato 2020).

Local and regional governments have also become interested in mission-oriented innovation policy. For instance, the London borough of Camden has organised a Renewal Commission that is developing a mission-oriented approach to shape an ambitious policy programme to level up long-standing inequalities exposed by COVID-19 (see UCL IIPP, Camden Renewal Commission). Greater Manchester is the first city in the world to have adopted IIPP's conception of grand challenge mission roadmaps and begun implementing the mission roadmap.

At the urban level of governance, local government organisations operating in different contexts – even within the same national setting – can have distinct legal powers, informal roles and access to resources that can be used to address grand challenges. The particular arrangement of each local government organisation makes it necessary to evaluate the characteristics of individual urban systems when analysing how a policy or methodology was applied in one setting and how it may be adapted elsewhere. However, there are often administrative, institutional and governance similarities between local government organisations, rendering learnings from one context to another constructive and advantageous.

The particular dimension of local government arrangements in every country makes it impossible to form exact like-for-like comparisons. However, there are broadly four general spheres of government– international, national, regional and local (Hooghe, Marks and Schakel 2020). For example, in federalist countries such as Germany or the United States, strong regional ‘Bundesländers’ and ‘states’ develop legal frameworks and financing structures that local government organisations adhere to when developing policies. Conversely, nations with a unitary structure such as the United Kingdom or Turkey have strong centralised national governments that often maintain significant bureaucratic, fiscal and administrative controls, and manage consolidated funding streams that are dispersed to cities with little influence from regional government organisations.

Cities seeking to accelerate climate action and foster systems change have to develop and implement policy in coordination with higher levels of government, as well as engaging the wide range of actors at the local level. In most urban areas, the public sector is only directly responsible for a portion of local emissions. For example, recent analysis from the City of Bristol published in 2020 found that public services such as council activities, health and social care, education and policing services accounted for 14% of the city’s total direct and indirect carbon (ARUP 2020). While this represents a large portion of Bristol’s total carbon emissions, it is illustrative of the wider challenge facing local government organisations: that local public sector organisations are only directly responsible for a fraction of their city’s entire carbon footprint. This highlights that if a city is to fully decarbonise, roadmaps are necessary to steer the activity of all actors within the urban system towards the wider objective of decarbonisation.

For local government organisations to address climate change across a whole city system, there is a need for specific approaches that can facilitate holistic, collaborative actions between actors. Mission-oriented innovation is an approach designed to initiate and support these new forms of collaboration between actors; a critical necessity for local climate transformation. Furthermore, for grand challenges such as climate change, where local government organisations in most contexts have limited and indirect legal authorities that can be used to resolve the challenge, mission-oriented innovation can be used to bring together a coalition of the willing, building and shaping momentum for widescale action through voluntary collaboration.

4. Creating a clean growth mission for Greater Manchester

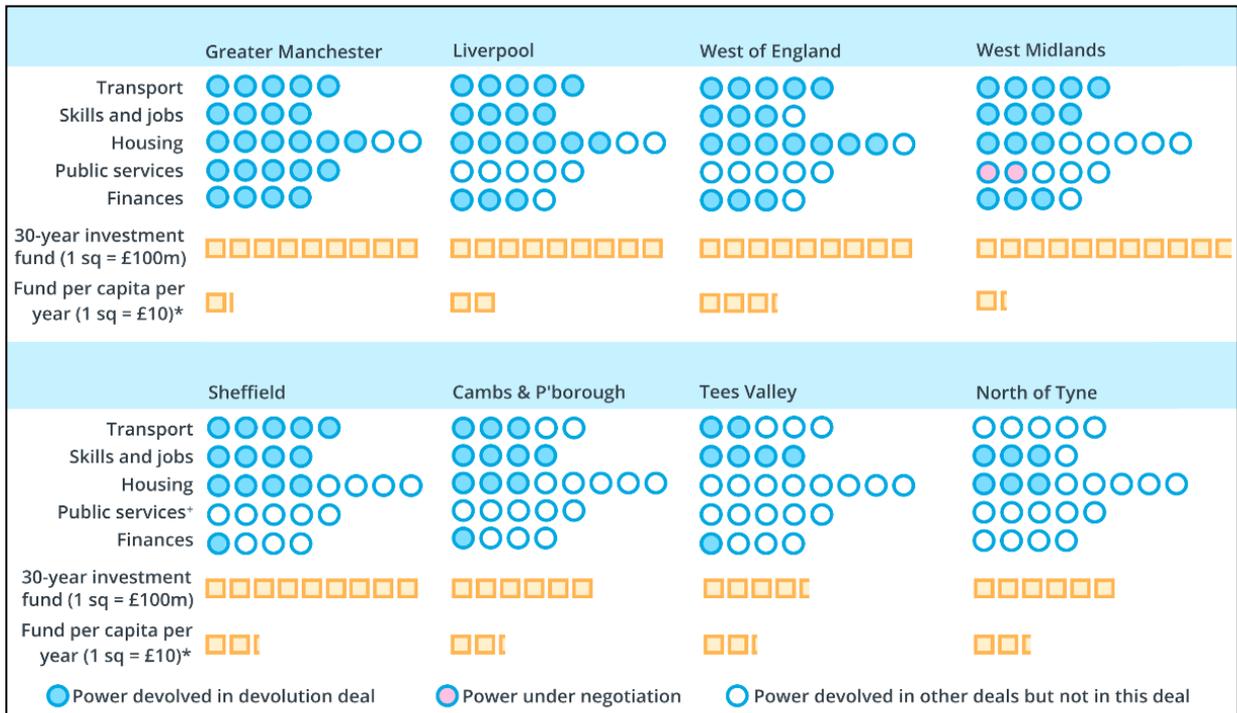
To evaluate how mission-oriented innovation theory can be applied at the local scale to facilitate the green transition, we follow the case of Greater Manchester, the first city-region in the world to adopt a mission and design a mission roadmap. This section analyses Greater Manchester’s mission – the contextual setting in which this process has taken place, how the green transition became a mission-oriented policy and how the mission is being mainstreamed. Through this analysis, the section explores the practical manifestation of mission-oriented innovation in one place-based setting, underscoring how the approach can be used as a green transition roadmap with ambitions to facilitate long-term transformational change.

4.1 Climate politics in Greater Manchester

Greater Manchester's mission is rooted in the UK's unitary state political structure and local government devolution process that has emerged over the past five decades. Historically, the UK is one of the most centrally governed Western democracies (Lander, Keuffer and Baldersheim 2016). Although the UK central government still retains significant power and control over policy decision-making and resources, there have been some recent devolved powers granted to local governments, beginning in 2000 when the Greater London Authority was established. Since 2012, 11 other local areas across the UK have negotiated bespoke deals with the UK central government, each transferring different responsibilities, powers and resources.

These negotiated devolution deals have given particular cities and local areas considerably varied powers. Greater Manchester was the first urban area to legally agree a 'combined authority' deal with Westminster in its 2012 City Deal, following the establishment of the Greater Manchester Combined Authority in 2011 (Greater Manchester Combined Authority 2012). GMCA arguably has gained the greatest degree of autonomy out of all the organisations that have made devolution deals, with expanded controls of its transport, health and business support budgets, as well as its housing investment fund and the power to produce a statutory spatial planning strategy. Furthermore, GMCA gained a directly elected London-style metro mayor through the combined authority model, created to provide democratic responsiveness and political accountability for the city-region and GMCA. Figure 2 shows the relative local powers of GMCA in relation with comparable local devolved areas.

Figure 2. Devolution deal coverage: Number of powers devolved by subject in each deal



Source: Institute for Government

As illustrated, GMCA has broad powers over:

- **Transport:** including a devolved, consolidated transport budget, bus franchising power and local road networks
- **Skills and jobs:** including business support services and the adult education budget
- **Land and housing:** including a housing loan fund, the right to establish mayoral development corporations, spatial strategy and compulsory purchase order powers; but *not including* 'planning call-in powers' or 'consultation on strategic planning applications'
- **Public services:** including health and social care integration, children's services, probation, troubled families and policing
- **Finance:** including retention of business rates and community infrastructure levy

Greater Manchester's first mayoral election was held on 5 May 2017, with then-MP Andy Burnham running as the Labour Party's candidate. During the mayoral campaign, Burnham held two environmental hustings events that shaped his election manifesto. While no consensus climate or environmental policy ambition was reached through the events, the outcomes of these discussions led Burnham to make a commitment to lead an engagement process, bringing together experts and public stakeholders to determine a new accelerated green economy and carbon neutrality goal for the city-region, announcing the outcomes of the process at a Mayor's Green Summit (Burnham for Mayor 2017). At the time of the hustings, Greater Manchester had a carbon neutrality target of 2050, in alignment with the UK national target. After Burnham won the election, GMCA's senior administrative leadership used the election manifesto as a strategic document to guide the immediate priorities of the organisation. Policymakers then began to prioritise how GMCA could determine a more ambitious carbon neutrality target than existed, initiated through top-down leadership, to be shaped through bottom-up public debate.

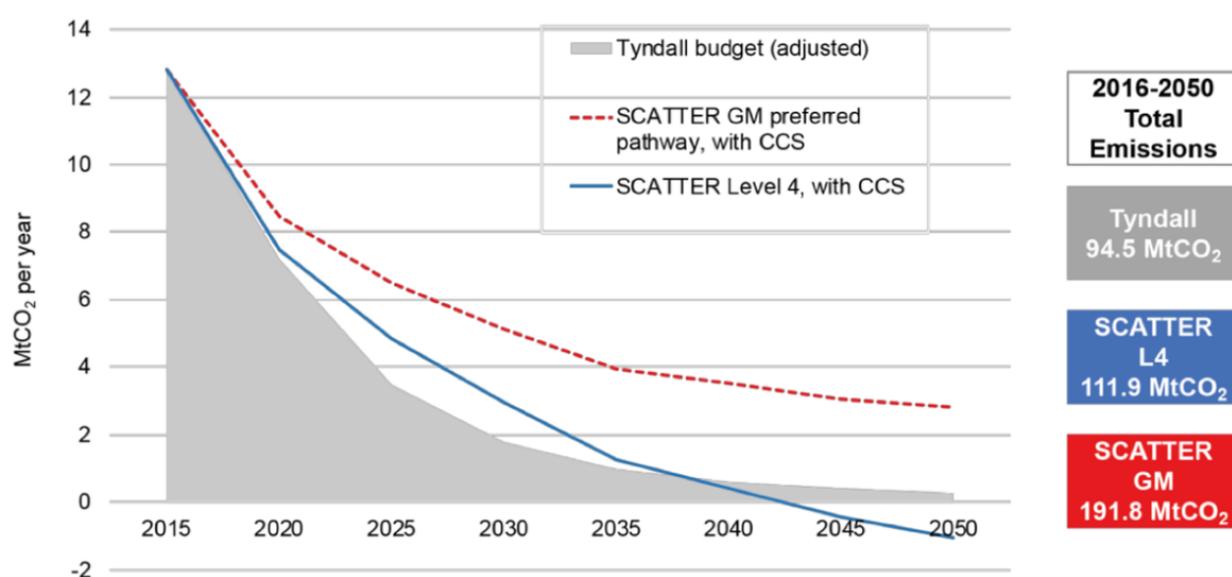
4.2 Developing a clean growth mission roadmap

The GMCA Environment Team, with support from the leader of Stockport Council, GMCA's Green City Region portfolio lead, was responsible for leading the process of determining the city-region's accelerated carbon neutrality target and developing a pathway to achieve the new goal. To ensure the process would be influenced by democratic public engagement following the mayor's manifesto pledge, the GMCA Environment Team and leader of Stockport Council developed and organised a new participative governance body, the Green Summit Steering Group (GSSG), to influence the process. The GSSG was comprised of 27 individuals who represented local universities, campaigning groups, voluntary sector organisations, SMEs, service providers and public sector organisations. It met monthly beginning in September 2017. Following this initial meeting, the GMCA Environment Team, leader of Stockport Council and GSSG determined that the process of setting the carbon neutrality target and delivery pathway should be developed through a dual-track approach, the first harnessing the expertise of technical practitioners and the second mobilising the public's enthusiasm.

The technical work package aimed to set a science-based carbon neutrality target for the city-region, based on Greater Manchester's 'fair' contribution to the UK's Paris Climate Agreement commitments (see Figure 3). This was led by the University of Manchester's Tyndall Centre for Climate Change Research, which developed a carbon target and budget for Greater Manchester

(Kuriakose et al. 2018), and the consultancy firm Anthesis Group, which designed SCATTER, a city-level carbon impact pathway tool (Anthesis Group). The public engagement work package was led by the GSSG and initially took place through 42 'listening events', intended to gather and distil diverse public perspectives surrounding the ambition of the new goal and what associated policy actions should prioritise. These listening events took place through facilitated participative workshops that engaged key practitioners and interested civic groups spanning energy system designers, small business leaders, citizens, organisations developing community energy projects and others. The listening events took place in all ten of Greater Manchester's local authority constituencies and engaged over 1200 individuals.

Figure 3. Carbon reduction pathways for Greater Manchester



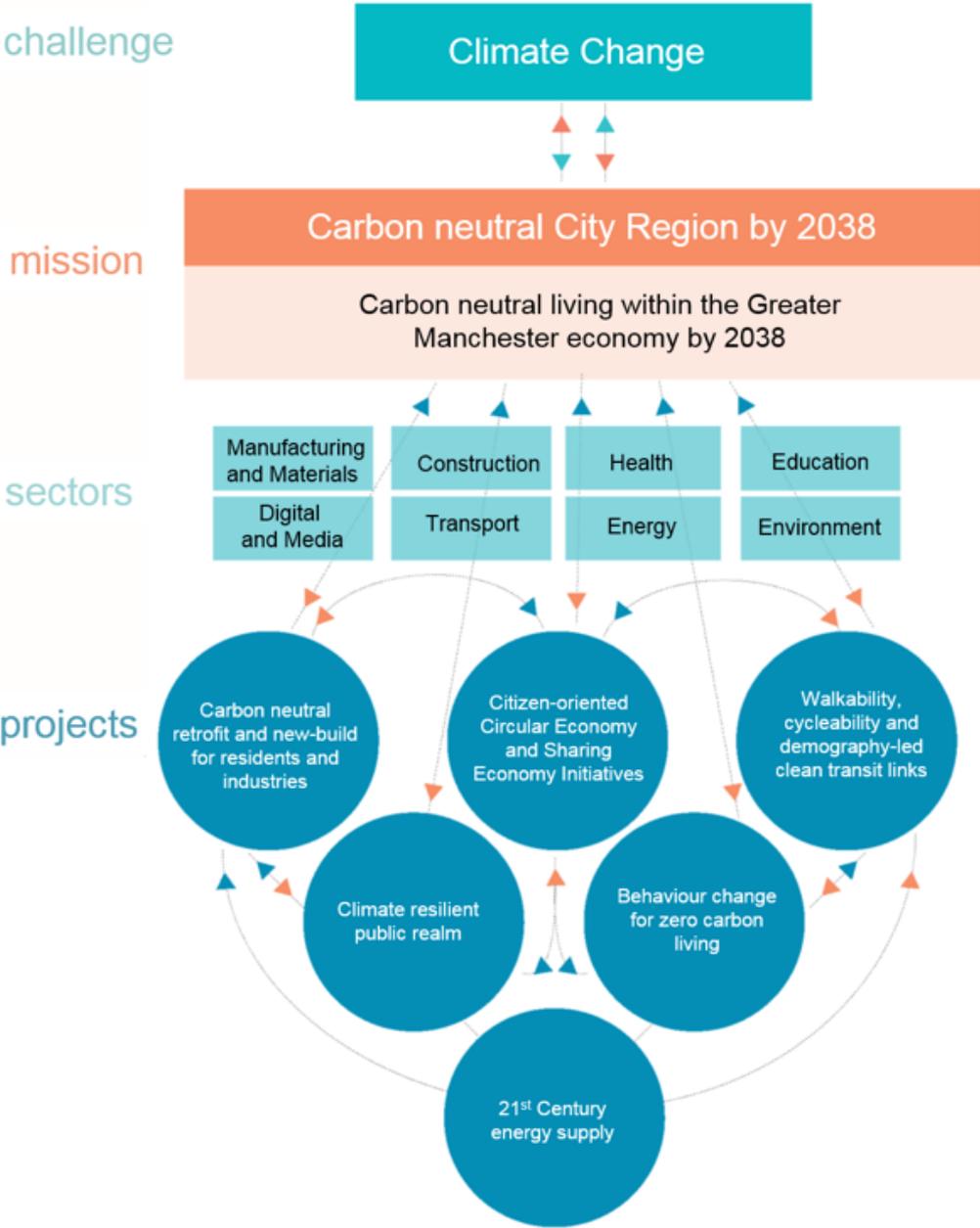
Source: Anthesis Group

The initial outcomes of the technical and public engagement work packages were brought together at the Mayoral Green Summit held on 21 March 2018. Shortly after the event, GMCA released the *Springboard to a Green City Region* report, a distillation of the city-region's collectively produced climate ambition and the co-designed programmes that would be developed to achieve it (GMCA 2018). The mayor announced at the Green Summit that he and GMCA would lead the development of a full strategy document, identifying a delivery pathway for the *Springboard* report's ambition that required innovation to bridge the 'carbon gap', and that a second Green Summit would be hosted in 12 months to release this new action plan. As with the *Springboard* report, it was announced that the strategy document would be collaboratively produced by GMCA and the wider public through thematic workstreams.

Following the 2018 Green Summit, the GMCA Environment Team organised a series of thematic workstreams across the fields of building, energy, and sustainable consumption and production to support the climate strategy's development. These workstreams brought together technical practitioners to design actionable policy objectives that could be implemented to realise the key ambitions of the *Springboard* report. While the thematic workstreams were ongoing, GMCA had

also commissioned a panel of experts to map the city-region's current economic landscape and identify how Greater Manchester might better utilise its economic strengths to reduce social disparities, boost wages and improve productivity. Six leading economic experts participated in the commission, including IIPP's founding director Professor Mariana Mazzucato. Alongside the findings of this commission, published in the *Independent Prosperity Review* (IPR) in March 2019 (Coyle et al. 2019), were 15 technical reports providing additional analysis, including one by IIPP, which evaluated the potential for a 'mission-oriented approach' to Greater Manchester's clean growth challenge and proposed using a hypothetical mission roadmap to support the implementation of the city-region's climate goal (see Figure 4; Mazzucato, McPherson and Hill 2019).

Figure 4. Hypothetical mission roadmap

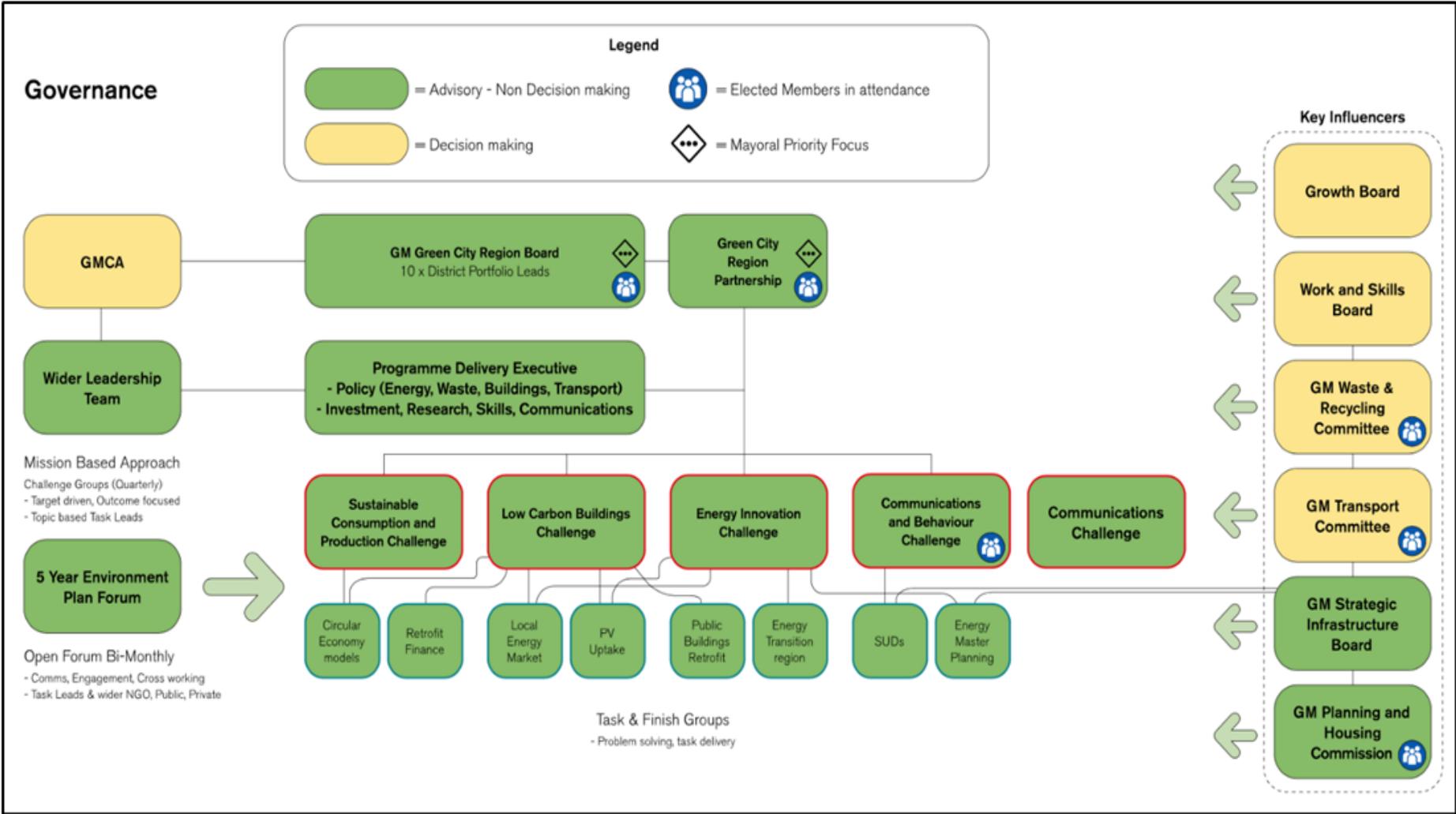


Source: Greater Manchester Independent Prosperity review, IIPP

GMCA decided to adopt mission-oriented innovation as a framework to support the delivery of its climate neutrality pathway. This was codified in Greater Manchester's *5 Year Environment Plan*, released at the second Green Summit, held on 25 March 2019 (GMCA 2019). This strategy explicitly positioned the hypothetical mission roadmap proposed in the IPR technical report as a framework to mobilise public and private resources, and various actors across the city-region, to collaborate in new ways around the strategy's target. Following this, GMCA, with support from the UK Department for Business, Environment and Industrial Strategy (BEIS), launched the Greater Manchester *Local Industrial Strategy (LIS)* in June 2019 (GMCA and BEIS 2019). The LIS further strengthened Greater Manchester's commitment to mission-oriented innovation, taking up the clean growth challenge as a pillar of the strategy that was to be achieved through the mission.

After Greater Manchester's *5 Year Environment Plan* and *LIS* had formally been adopted by GMCA, the organisation began translating its mission roadmap from the policy design stage into action. This process started with GMCA evaluating its existing climate governance bodies and apparatuses, and reshaping these structures to become aligned with the mission. After several months, this culminated in GMCA developing an integrated governance framework to deliver the mission (Figure 5). These activities included evaluating existing governance bodies, repurposing others and creating several new ones. The final mission governance framework was agreed by GMCA in Autumn 2019 and the GMCA Environment Team then began nominating actors to be representatives on each governance body. Since adopting the integrated mission governance framework, GMCA has begun implementing its mission. As we evaluate in section 3 of this report, GMCA was able to mobilise activity internally within the organisation and, crucially, with external actors across the city-region. The process of developing the mission has created a durable foundation for the mission activities taking place today.

Figure 5. Integrated mission governance framework



Source: adapted from GMCA

5. Mission in action: Case study analysis of Greater Manchester's 'mission-based approach'

In the section below, we evaluate the implementation activities Greater Manchester has led since adopting its mission. Our analysis cuts across three areas – governance, finance, and formal powers and soft roles – that have been determined as significant capabilities for the delivery of missions (see Mazzucato 2019; Mazzucato and Macfarlane 2018; Kattel and Mazzucato 2018). We investigated Greater Manchester's mission implementation activities through a practice-based theorising approach by conducting key stakeholder interviews with GMCA policy officers and practitioners engaged in the challenge groups, and analysing relevant GMCA policy and documentary materials. We also gathered fieldnote data while observing GMCA's mission implementation activities, and through leading and presenting at capability-building sessions with stakeholders leading the mission. This data was thematically analysed and is quoted below.

5.1 Governing the mission

Mission roadmaps distinguish between 'sectors' and 'actors' – the former are the industrial and service groups carrying out innovation activities, while the latter aim to steer and guide actions. In the governance of the Greater Manchester mission, these two came closer together, effectively becoming indivisible. It may be difficult to distinctly isolate sectors and actors when facilitating climate missions at the city level, as GMCA has displayed. However, this may not necessarily be an issue if the governance of a city-level mission is structured to bring together diverse actors from a mix of sectors to stimulate and direct innovation. Through its integrated governance framework, GMCA established five 'challenge groups' as the primary governance structure for the mission, comprised of external stakeholders with GMCA support. One of GMCA's aims has been to establish distributed ownership of the mission, and to encourage and enable the stakeholders it has worked with to drive the mission forward.

GMCA has established a programme and activity governance structure around the five Challenge Groups (CGs), each relating to different aspects of the mission. These are roughly aligned with the 'mission projects' set out in the hypothetical mission roadmap (see Figure 5). Since beginning to implement the mission, GMCA has initiated the following CGs:

- Low carbon buildings
- Energy innovation
- Sustainable consumption and production
- Natural capital
- Communications and behaviour change

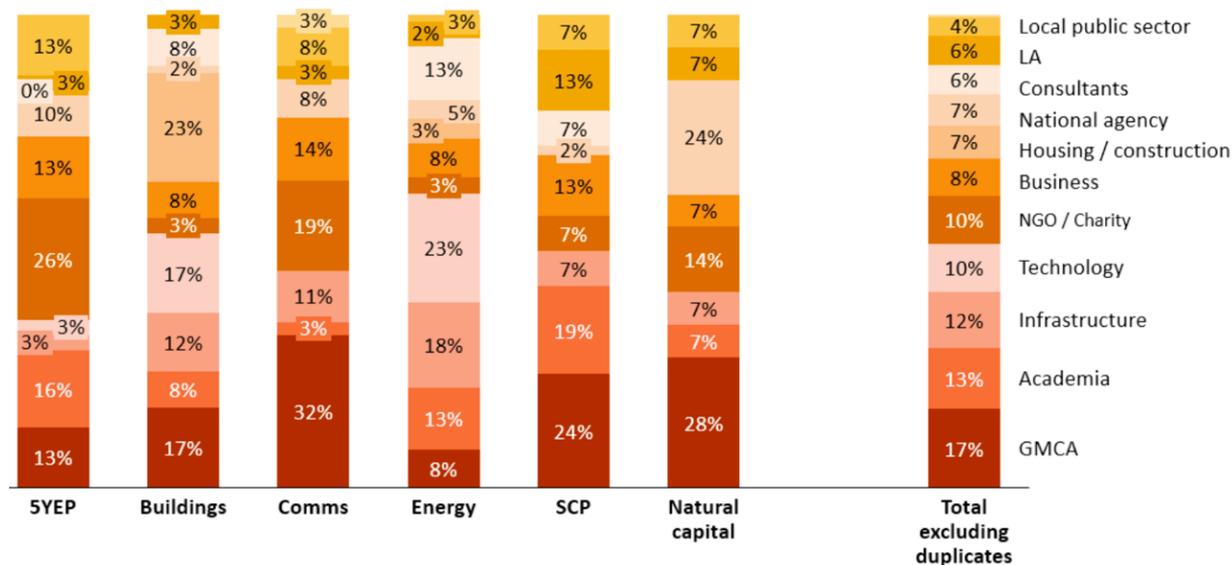
Members of the CGs are a combination of GMCA and local authority (LA) employees, academics, business, NGOs and charities. Each CG meets quarterly, is chaired by an actor representing a non-GMCA organisation and is tasked 'to liaise with GMCA employees to stay up to date, plan and structure the work, and act as a sounding board to GMCA.' The five CGs sit within the mission's integrated governance structure, overseen by the Green City Region Partnership that provides high-level oversight of the activities taking place within the CGs and other governance bodies

involved in the mission. The CGs also receive scrutiny, advice and support from the 5 Year Environment Plan Forum, which provides feedback on the CGs' activities and helps identify potential opportunities or synergies to link the work of the CGs to relevant activities taking place throughout the city-region.

Within each CG are a number of 'task and finish' groups, responsible for the delivery of projects that align with the priorities of the CGs. Task and finish groups may have relevance to more than one CG – for example the local energy market task and finish group is collaboratively being take forward by the energy CG and low carbon buildings CG. The task and finish groups are designed to have a finite duration, concentrating on discrete activities that support an acute objective, culminating once the defined objective has been met. Each task and finish group is constituted of CG members, some with representation from multiple CGs, and they are accountable to the CGs for delivering their particular aims.

Based on analysis of data provided by GMCA, the CGs and 5 Year Environment Plan Forum have a total of 227 members (excluding duplicates – there are several individual actors that participate in more than one governance body). In Figure 6 we have categorised these individuals into 10 types of organisations. GMCA employees make up the largest share of individuals represented in the mission's core delivery bodies (17%), though this varies from CG to CG. Other well represented groups include academia (13%) and infrastructure (12%). Less represented groups include individuals from local public sector organisations and Greater Manchester's constituent LAs, although there is some variation.

Figure 6. Challenge Group and 5 Year Environment Plan Forum membership by organisation type, %



Source: GMCA

Greater Manchester's mission is most directly being implemented through the 5 Year Environment Plan. This policy has 21 key priorities, against which GMCA is tracking or planning to track 28 measures. These priorities and measures are primarily being facilitated by the CGs and 5 Year Environment Plan Forum, and are being tracked in three categories. The first are priorities that are

acutely defined, with available data to show the progress that has been made – for example, ‘number of trees planted’, ‘additional renewable capacity (Mw)’ and ‘increased number of ultra-rapid charging points.’ The second category are those measures that are defined, but do not yet have accessible data – most measures fall into this group. Finally, some priorities do not yet have any established measurable target against them, such as ‘reduce unnecessary food waste’.

There is a RAG (red, amber, green) rating being used to evaluate the mission progress where priorities can be flexibly appraised to determine whether each is on track. At the time of this analysis only two of the 21 priorities were labelled red to indicate severely inadequate progress is being made, while ten were amber demonstrating increased activity is required and nine were green to signal that they are on track. It is opaque how each priority is appraised, particularly those that have been assigned a rating without discernible data (for example, ‘uplift in urban green infrastructure’) or a corresponding measure (for example, ‘reduce the head demand in new buildings’). The RAG rating system is notable for its ability to support the mission, and encourage an environment of innovation between GMCA and partners involved in implementing the mission through the CGs, by evaluating directional progress rather than statically determining long-term success. Mission-oriented institutions benefit from tracking and evaluating projects against robust frameworks that are open to feedback, non-linearity and tipping points that conventional approaches such as cost-benefit analyses or KPIs fail to capture, instead statically measuring end-of-system outputs.

The framework being used to implement and govern Greater Manchester’s mission predominantly through the CGs is strongly aligned with mission-oriented innovation theory in its cross-sectoral, multi-disciplinary structure. While Greater Manchester’s hypothetical mission roadmap has been modified during the implementation phase, one of its clearest successes thus far has been its ability to bring together a diverse range of actors in new collaborations and build shared commitment to the mission (see Figure 7). For the mission to accelerate and amplify progress in the future, our analysis finds that the CGs face three main challenges:

1) Directed innovation

Mission-oriented innovation seeks to support a form of innovation that is directed at society’s most complex, pressing challenges – including the climate crisis (Mazzucato 2018). The playing field must be actively tilted to mobilise innovation in the direction of green economic activity. As detailed above, ‘innovation’ is meant in its broadest sense; not just in scientific laboratories and R&D programmes, but the full mix of regulatory, social, financial, cultural, policy-based and technological innovation. GMCA recognises that simply rolling out and scaling up its current internal projects is unlikely to meet the scale of the ambition set by the mission. Innovation must come from the city-region as a whole.

2) Building a movement

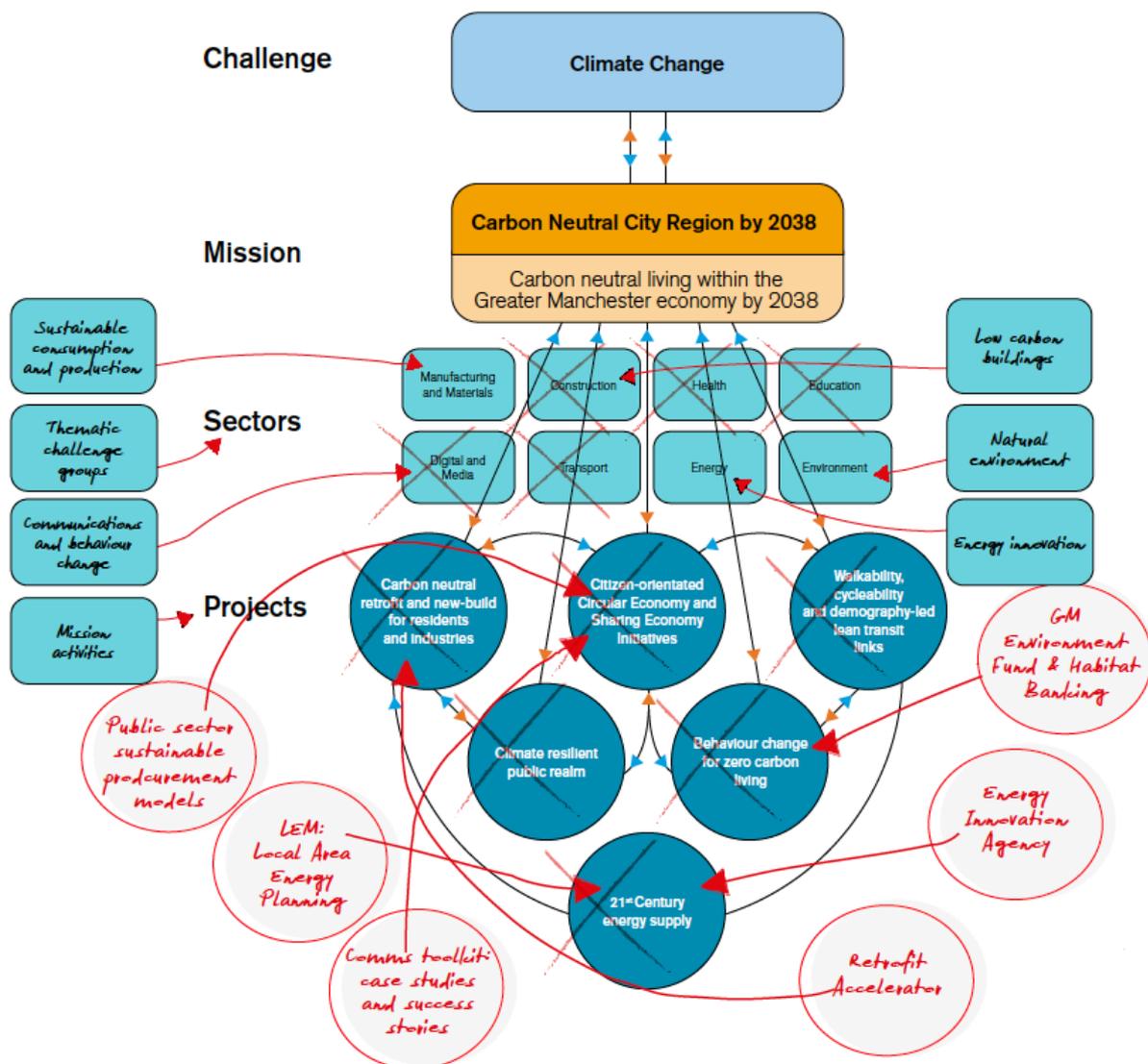
The CGs are constituted from a mix of people and organisations that have enabled the mission to gain traction beyond GMCA. However, the membership currently remains limited to individuals with formal expertise and experience in the selected sectoral domains, and it is not clear that the current coalition of members is itself enabling the type of cross-sectoral movement that is needed for the mission. A sense of ‘mission mystique’ (see Goodsell 2011) that could mobilise a wider movement has yet to evolve, despite the

strong political buy-in for the mission. For the mission to achieve an exponential rate of progress, there is a need for it to be co-owned by actors across Greater Manchester, who can collectively drive system-wide change by organising knowledge and ideas for innovation between sectors (Leadbeater 2018).

3) Fostering distributed ownership

One of GMCA's priorities for the CGs is to cultivate a culture in which all the individuals take ownership of the mission and collectively drive the agenda. One GMCA policy officer put this, 'We want to change the expectation of "it's our job" to "it's everyone's job."' There is general recognition that GMCA can't achieve the mission on its own, or even just with the supporting actors involved in the CGs, requiring the mission to become a diffused objective for stakeholders across the city-region.

Figure 7: Reconfigured actioned mission roadmap



Source: Institute for Innovation and Public Purpose

5.2 Financing the mission

In this section we investigate the topic of the finance instruments and approaches that sit behind missions. Our research has shown that finance is not neutral – the manner in which innovation is financed, including the length, structure, conditions and characteristics of financiers, affects the outcomes and success of the innovation.

Missions are thought to be best facilitated using dynamic budgetary mechanisms that can provide flexible support to increase funding if additional investment could make the difference in reaching a mission objective, or scaling back funding if a mission project appears to have failed (Kattel et al. 2018). However, GMCA has no centrally held mission budget. As one CG member noted, 'There has never been a dedicated budget as a single source, or that articulates how different (project) budgets come together.' Unlike NASA putting a man on the moon or the UK industrial strategy, there is no consolidated mission budget; the main resource committed from GMCA has been internal staff time. Projects within the mission have been funded by grants from institutions such as the European Union (EU) or the UK Department for Business, Energy and Industrial Strategy (BEIS). Throughout the initial phase of implementing the mission, GMCA has focused on building relationships and establishing governance structures that will be the foundation of future work.

GMCA's reliance on grant funding illustrates the current reality of work taking place at the local level in the UK and in many other contexts. Local authority budgets were strained even before the COVID-19 pandemic, having faced significant funding cuts from ten years of austerity following the 2008 financial crash. The think tank IPPR published a study in 2020 that found local authorities in England have on average reduced their annual spending on services by about 13% between 2009-10 and 2018-19, although the impacts of austerity have not been evenly distributed across the country (Johns 2020). For instance, the North West region, which includes Greater Manchester, saw its spending cut by over 20% during this period, while the South had its funding reduced by 9%. The COVID-19 pandemic has led to further local government spending reductions on top of this as revenue streams have also dried up (for example, there has been a large decrease in the number of people using public transport and a drop in business rate collections), while demands on local services has increased and unemployment has risen 91% since March 2020 (Bounds 2020).

Against this backdrop, GMCA's strategic approach to financing the mission has been to find funding to match the needs when opportunities arise so that, as one policy officer noted, 'Ambition is not limited to the size of a budget.' Some also worried that if there was a central mission budget, there may be pressure or an expectation to spend it all, regardless of its impact or public value. One CG chair perceived the value of the CGs as a symptom and result of this approach, identifying synergies and strengthening existing projects through collaboration, rather than enabling new activity to develop: 'The real power of the mission-based approach is about aligning things so that they are all moving in the direction.'

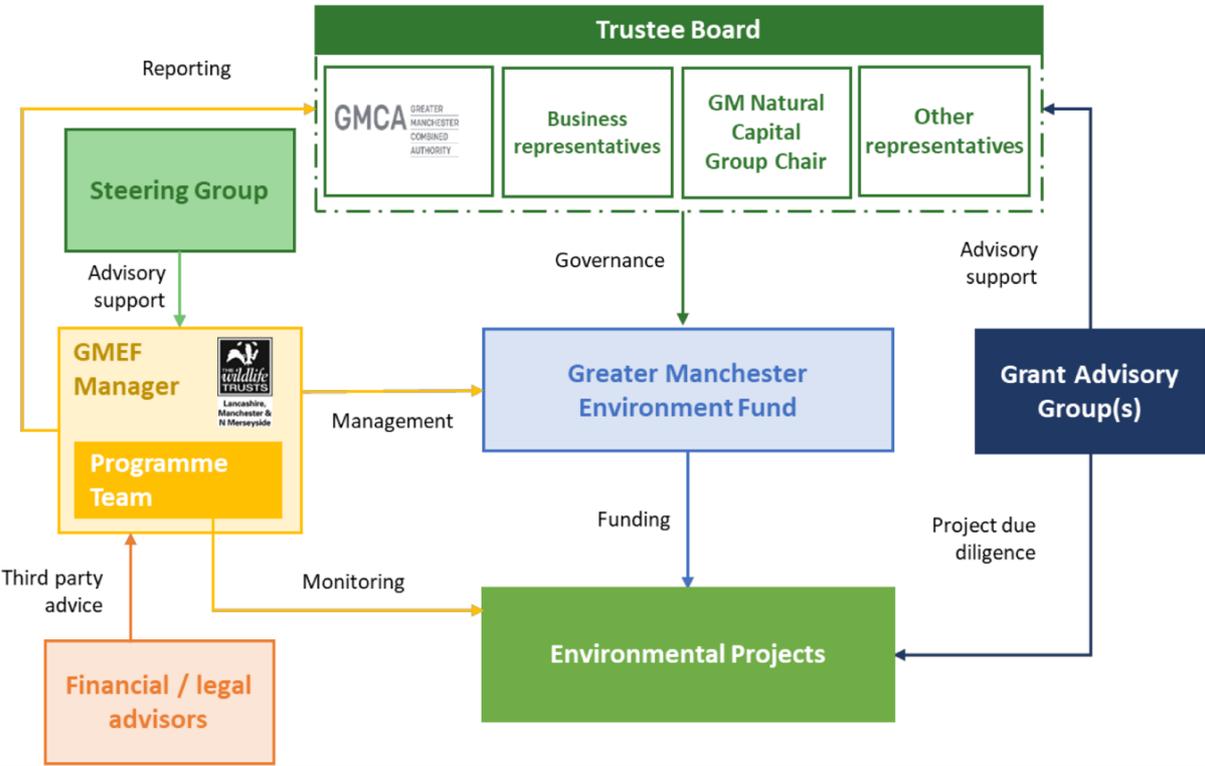
There is widespread acknowledgement that as GMCA moves forward implementing its mission, the focus must shift toward finding new ways to finance it. We take the time here to highlight two funding-oriented mechanisms – the GM Environment Fund and IGNITION project – that are currently in the development stage, but intend to mobilise private finance to support nature

restoration projects by creating new investible assets that will provide financial returns. This is one strategy local governments looking to finance the green transition in the UK can utilise, but it is far from the only one.

The GM Environment Fund

One mechanism GMCA has designed to attract private investment to support the mission is through the GM Environment Fund. This finance vehicle is the UK's first regional environmental fund to target social, financial and environmental objectives. It has been established as an independent charitable body and will initially provide a unified governance structure to pool funding from the public sector, foundations and philanthropic organisations, and aligned corporate organisations, to provide grant funding for investible projects (GMCA 2020).

Figure 8: Initial governance structure of the GM Environment Fund



Source: GMCA

The long-term objective of the fund is to mobilise private investment around specific sub-funds that will generate a return. The two opportunities GMCA has identified as the most likely to be initially deployed are habitat banking stimulated by changes in regulation (specifically the need for new development to create biodiversity net gain) and a carbon trading facility. The fund's governance structure will evolve as the operations of the fund grow. Ultimately, the fund's objective is to create a self-sustained local environmental impact investment sector.

IGNITION

The EU-funded IGNITION project aims to deliver innovative financing solutions to support investment in Greater Manchester's natural environment. IGNITION will focus on long-term solutions, bringing new business models to market by highlighting evidence of the benefits of street trees, green walls, green roofs, urban green space and sustainable drainage systems (SuDS). The last of these – SuDS – is the concept currently being developed, where utility companies would install nature-based solutions in their catchment areas to reduce water costs and share the savings of those infrastructure investments in the form of a partial bill reduction. There needs to be a single bill payer across multiple sites for this investment vehicle to be viable. This means that while it may be appropriate for the local authority estate, it is more difficult to launch with hospitals or schools, despite their large aggregate footprint.

Although the initial objective was to attract private investment, IGNITION's unproven business model means the first tranche of projects may need to be funded through local authority borrowing. As much of the value created through projects comes in the form of co-benefits, this means that in the future, as noted by one CG member, 'It might make sense to turn to community funding/green improvement districts.' This challenge exemplifies a crucial difficulty of mobilising private investment, but also illustrates why the public sector may need to fill the role of mobilising initial capital – establishing an evidence base, building a new business case and shaping a new market.

As analysed above, there is no central budget for GMCA's mission and there are limited mechanisms being used to finance the mission. Long-term financing of GMCA's mission, as well as for green transitions in other cities, will require changes from multiple levels of government and in the private sector. Without this, the mission and transition will be near impossible – as one CG member stated, 'The overriding issue is a lack of long-term consistent government funding.' There is a need to change the financial and fiscal system to unlock civic capital (i.e. capital that can be deployed for public interest investment at the local level). This demands change within accounting systems to accurately quantify shared threats that are posed by climate breakdown; new decision-making practices that enable empowering forms of democratic participation; greater fiscal devolvement in general and new forms of taxation that capture growth in private assets from public sector investments (for example, land value taxation); new dynamic procurement mechanisms; portfolio approaches that fund systems based on outcomes; and insurance products that reflect the 21st century's risks (Treger 2019).

Finance mechanisms are frequently positioned as binary between either public or private measures. However, blended finance tools are increasingly being developed and deployed in a variety of contexts, including towards the climate transition. Blended finance aims to maximise mutualistic synergies between the public and private sectors through higher quality partnerships. Despite some potential, blended finance has in some instances been used by the public sector to de-risk projects for private investment, further socialising the risk of innovative projects while privatising profits. The types of large-scale innovative projects needed to facilitate Greater Manchester's mission and city-level clean growth, such as decarbonising building heating and enabling deep retrofitting across the full city-system, are intrinsically uncertain and require leveraging large capital investments. Existing private financial models are not well adapted for

these ventures, because they might not produce returns for long periods, they might achieve limited returns or may be viewed too risky. Similarly, available city-level public finance alone does not have the amount of capital required to fund the climate transition. Blended finance options extend the reach and effectiveness of both public and private financing, amplifying their impact and accelerating progress toward clean growth.

GMCA's experience funding its mission demonstrates that there may be a gap between the conceptual development of new financial approaches for the green transition in cities and their deployment. To support GMCA and other cities facilitating similar green transitions, we outline five public and three private finance options, with an overview of their relative advantages and weaknesses for mission-oriented policymaking.

1) Public sector procurement

GMCA is one organisation within the 'GM Family' – affiliated public sector organisations including the local authorities, health and social care services, and police and fire departments that collectively have significant procurement powers. Identifying the mission's potential co-benefits between climate and other priorities by engaging relevant partners would be a more sophisticated approach that would accelerate procurement's ability to finance the mission. For example, investing in better housing would reduce energy use, lower household utility bills and improve health, something made vividly clear during the COVID-19 pandemic.

Oldham, one of the ten local authorities in Greater Manchester, has already begun to deploy this approach, working with the NHS to co-fund the Warm Homes Oldham programme, which helps struggling households pay their energy bills, heat their homes and reduce their energy bills (Oldham Council 2020). Progressively moving from siloed budgeting that narrowly prioritises statutory service duties towards a more strategic cross-departmental budgeting model based on outcomes could open the door to the health service paying or contributing towards housing updates. This integrated cross-departmental budgeting model would support public sector organisations to address challenges holistically and enable public procurement to efficiently pool resources to finance the mission. Similarly, Preston in northern England provides another example of successful public sector procurement under the umbrella of its Community Wealth Building approach to purpose-oriented local economic development (see CLES 2019).

2) Urban wealth funds

Given the financial strain GMCA and local governments across the UK face following a decade of austerity and now the impact of COVID-19, it is unlikely that there will be meaningful excess funding that can be allocated towards the mission. However, local governments could explore the different models of existing public wealth funds to provide long-term value by helping to create businesses and develop new markets that would otherwise not come into being (Detter, Fölster and Ryan-Collins 2020).

Urban wealth funds are a type of public wealth fund that have been developed to add fiscal space and strengthen the balance sheet of public finance at the city level.

Internationally, urban wealth funds have been effective vehicles, paying for housing without the use of taxes, as well as infrastructure investments in transport, education and

healthcare. Greater Manchester could, for instance, utilise an urban wealth fund to consolidate its publicly owned real estate assets and create a large-scale retrofit sector by increasing the demand side of the emerging market, using its access to credit to directly pay for retrofitting in the public domain. This would stimulate the supply side of the equation, building the market's skills base, developing local supply chains, lowering retrofit costs through economies of scale, accelerating the local retrofit market and increasing tax revenue that would resupply the urban wealth fund's initial investment.

3) Mission level funding and budgets experimentation

GMCA has allocated some of its general budget to support the mission by providing a portion of the initial seed funding for the Energy Innovation Agency and creating the 'project manager for the mission-based approach' role. However, this funding has been appropriated for narrow uses and, given local government financial strains across England, is likely to remain limited. Moreover, a core 'mission budget' alone would not be enough to pay for the breadth of programmes required – for retrofitting, nature restoration or new energy installation. The challenge for GMCA and other cities facilitating green transitions is to simultaneously scale up and roll out activity, while recognising and undertaking action to support the further innovations that will be needed. Challenge prizes could be one approach to this hurdle, rewarding innovators who develop new solutions. The EIT Climate-KIC Healthy Clean Cities project that funds cities testing strategic experiment on climate action is a further example of flexible funding that could be used to encourage innovation and learning.

4) Value sharing mechanisms

GMCA's mission will require significant investment and could explore ways to share in the value that is created through innovation. For example, the Energy Innovation Agency will support the commercialisation of new innovations from the research of local innovators and universities. GMCA could secure an equity stake in the Energy Innovation Agency's projects, giving it an opportunity to earn returns on project successes that could be reinvested to scale action or reach new markets. As examined by Laplane and Mazzucato (2019), governments in recent decades have socialised the risks of investments, while privatising the rewards. This is not a productive model of public value creation. By taking a market-shaping role to implementing value-sharing mechanisms, GMCA could both finance its mission and capture public value.

5) Project-base grants

One option for city-region governments to fund missions is to apply for funding from grant-making organisations on a project-by-project basis. This is how GMCA is financing the majority of work on its mission. This results in a significant amount of time and capacity expended to find and apply for grants. The advantage of funding climate action through project-based grants is that it matches money to need, taking the approach of finding the right funding sources for each new mission project, rather than spending against a fixed 'pot'. Hypothetically, this could enable the pursuit of less restricted types of work to facilitate the mission, although it also means projects may need to satisfy other priorities as required by the funder rather than what is best for the mission (Kattel et al.

2018). It may also orient the mission towards established methods and tools where there is likely to be available funding, instead of focusing on innovation and discovery.

Furthermore, funding the mission through project-based grants may create a tendency or political pressure to bid for projects that provide the highest profile or most resource, instead of focusing on the projects that strategically align with the mission's objectives.

6) Aligning with investors' climate strategies

As consumer pressure increases and recognition grows of the climate crisis' scale, a range of investors may be willing to fund green projects that are in line with their social priorities. One of the largest opportunities are pension funds – for example, the GM Pension Fund, the largest local government pension fund in the UK, manages over 375,000 pensions and has committed to going carbon neutral. Its main focus is on moving money into low carbon or carbon neutral investments, increasing the money invested in renewable generation and using its shareholder influence to push companies in its portfolio to become carbon neutral. Other potential opportunities include philanthropic foundations, cooperatives and impact investors whose investments are 'made with the intention to generate positive, measurable social and environmental impact alongside a financial return' (Global Impact Investing Network 2020).

7) Creating investible assets

Much of the innovation in climate finance is in creating new types of assets from nature-based solutions, such as is the case with GMCA's IGNITION project. To be investible, assets either need to reduce costs (for example, improving energy efficiency), create value (for example, new parks that lead to house price increases) or meet regulatory requirements (for example carbon trading schemes). This can drive long-term structural change on financial markets. The US post-2008 Recovery Act provides an example of public finance deliberately playing a de-risking role, tilting the playing field in a green direction, as the recovery provided high-risk early-stage investment to renewables. It not only offered much-needed capital, but shifted the asset classification of renewables from 'unconventional' or high-risk 'energy' assets, towards more reliable 'infrastructure' assets, crowding in long-term institutional investors such as pension funds and insurers (International Energy Agency 2020). One potential barrier is in creating the mechanisms to quantify, attribute and price benefits to draw in the widest possible range of investors. For example, increasing greenery in cities is good for reducing the heat island effect and trapping pollutants, but also for improving wellbeing – greenery in office spaces has been linked to higher productivity (University of Exeter 2014). But some of these benefits are public goods – non-excludable and non-rivalrous – and so may be difficult to invest in by private investors.

8) Municipal bonds

A municipal bond would allow local authorities to borrow money from new sources and potentially at lower rates than they can from central government. The investment company Abundance has opened a fund with West Berkshire Council, seeking to raise an initial investment of £1m for a solar-powered energy project. It's the first such 'community municipal bond' in the UK and has raised nearly £720,000. The financial tool is more

established in the US, where the municipal green bonds are used to fund a variety of projects from flood defence infrastructure to transport, waste, land use and energy initiatives (Climate Bonds 2018). Municipal bonds have enabled large-scale investments in the US – in total climate ‘pure-plays’ (bond-issuing agencies with more than 95% of their revenue from climate solutions) have over \$14bn worth of outstanding bonds in 2018. This is a nascent market in the UK and there are key questions about the extent to which crowd-sourced financing will be able to support rapid climate action on the scale needed. However, the new UK Infrastructure bank could potentially purchase municipal bonds for new infrastructure projects, providing local and combined authorities in the UK with access to green finance (Arslan et al. 2020).

5.3 Local government powers and roles to facilitate the mission

As we analysed above, Greater Manchester has gained the greatest range of powers of any of the devolved city-regions in England (see Figure 3). While GMCA has limited powers and resources in comparison with local governments in other contexts that have less centralised government authority than the UK, such as in Austria or Germany, Greater Manchester’s City Deal has given GMCA the ability to directly support local decision-making in key areas, including housing and transport, relevant to the mission. GMCA’s mission is more ambitious in its carbon neutrality goal than the current national level target and is more holistic, encompassing the full range of activities that take place through living in the local economy. The mission’s framing requires GMCA to foster system-level transformation to achieve success. Present national policy frameworks in place to enable local climate action have not been designed to facilitate policy to the scale that has been set in the mission. If GMCA had greater devolved powers, these could be used to accelerate policy beyond the scope of existing national mechanisms, in the process developing a new pathway that other local areas in the UK could build upon.

Despite having relatively significant devolved powers compared to other local areas in the UK, there are still statutory and policy limits to the action Greater Manchester can take to implement its mission. For instance, GMCA does not have the power to enforce retrofitting through setting EPC standards, issuing fines to polluters, introducing carbon taxes or increasing charges for plastic bags. Perhaps most fundamentally, given that local government borrowing is constrained in accordance with CIPFA’s Prudential Code for Capital Finance in Local Authorities (Sandford 2020), the total amount of public investment available is limited. Considering these current limitations, local and combined authorities could consider lobbying national government for greater local tax-raising powers.

While there is a legal framework that informs GMCA’s formal powers, there are a range of ways that those powers can be used in practice. The mechanisms for using those powers, and enabling change, relate to the formal and informal roles that city-region governments can assume – as employers, convenors, regulators and more. Unlike some levels of government, city-region governments benefit from their capacity to creatively and flexibly use their various roles to address grand challenges through legal and soft powers. When these are leveraged successfully, city-region governments can achieve impacts that are beneficial for mission-oriented innovation. Table 1 outlines nine roles and powers that GMCA has taken on through its mission and then explores how we have seen it manifested.

Table 1: Powers and roles used by GMCA to implement its mission

Role and powers	Manifestation at GMCA
<p>Voice of the city-region</p> <p><i>Setting the agenda</i></p>	<p>GMCA's public commitment to the carbon neutrality mission influences how organisations in the city-region work. The GMCA Environment Team reflected that, 'There is a lot of power in simply stating the ambition and getting everyone aligned around that,' and an external interviewee noted that local authorities are changing their practices because it's been communicated as a clear priority.</p>
<p>Convenor</p> <p><i>Bringing stakeholders together</i></p>	<p>Through the visibility and status of the mayor's office, GMCA is able to bring diverse stakeholders together, which it has done effectively in building the challenge groups. The GMCA team recognises that, 'The most important power that GMCA has used to date is convening,' and it is continuing to build out the membership of those groups.</p> <p>The organisations that have joined the CGs have done so both to support the mission and because it aligned with their organisation's interests. As one interviewee said, 'We're not doing it out of altruism.' Another recognised that, 'Although we are doing it pro-bono, putting 20 days into something is the cost of sales – you don't get big projects if you are not at the table.'</p> <p>Although this 'soft power' of bringing the organisations together is an important first step, GMCA recognises that it won't be enough and that other means will be need to further collaboration on the mission.</p>
<p>Service provider</p> <p><i>Working on the frontline with residents to co-create solutions</i></p>	<p>GMCA and its constituent councils provide a wide range of services, including health, transport and education. Current proposals to introduce bus franchising, and the continued expansion of the walking and cycling paths known as the Bee Network, demonstrate how changing the services themselves can support the mission, but there may also be an opportunity to use the moments of direct citizen engagement to raise awareness.</p> <p>One interviewee from GMCA noted there may be a disconnect between the mission and the frontline, and said they were 'thought of as quite separate things.' While there are some people from the 'delivery end' of GMCA involved with the CGs, there may be an opportunity to deepen their involvement and bring the mission to life more in the day-to-day activities of GMCA.</p>
<p>Employer</p> <p><i>Setting employment terms and conditions to support carbon free living</i></p>	<p>As a direct employer, GMCA is able to set terms and conditions consistent with its values and aims – for instance, ensuring that all employees are paid a living wage. There are also particular benefits that align with the carbon neutrality mission – for instance, supporting the cycle to work scheme, providing car parking space for EV vehicles, enabling people to work from home (which is more likely in the post-COVID world), running a canteen with sustainable food options and limited packaging, and others besides. One step GMCA has already taken is to offer some staff carbon literacy training, so they are better supported in making environmentally positive choices.</p> <p>GMCA only directly employs a few hundred staff – as such, any changes it makes to its employees' behaviour will have relatively little impact. However, there are at least two groups that GMCA has significant power to influence. First, there is what one interviewee described as the 'GM family' – the local</p>

Role and powers	Manifestation at GMCA
	<p>authorities, police, Transport for Greater Manchester (TfGM), fire service, school and NHS/health employees. The combined employment of the public sector in GM could make a meaningful difference to the mission. Second, similar to procurement, GMCA can stipulate that outsourced employees – for instance, cleaners – are able to receive the same range of benefits as those directly employed.</p>
<p>Landowner <i>Control over buildings and land</i></p>	<p>GMCA is using its role as a landowner to enable the retrofit of council properties, creating a lead market with the scale and market certainty that is critical for galvanising organisations to invest in and upskill their workforces. It's also aiming to significantly expand tree cover and increase biodiversity on council-owned land.</p> <p>Most of the GMCA estate is fire stations. As with the 'employer' role, the biggest potential is looking at the whole 'GM family', and using the convening and influencing power of the mayor's office to drive change.</p>
<p>Procurer <i>Ensuring a carbon neutral supply chain that supports innovation</i></p>	<p>GMCA's Conditions of Contract for Supply of Services does refer to sustainable procurement. However, the conditions set out are not stringent – simply to comply with all environmental laws and regulations, provide data to GMCA and follow GMCA's environmental policies when working at their premises.</p> <p>In an interview, the GMCA's mission team said that, 'Going forward, procurement is a big opportunity' and that they would be looking at how to further drive sustainable procurement. Ashden, a climate innovation accelerator, rates 'ensuring the local authority supply chain is minimising carbon emissions' as one of the highest impact actions councils can take, so additional focus on this area makes sense for GMCA.</p> <p>Procurement also has a role in supporting innovation. As well as using the procurement budget to drive a more sustainable supply chain, GMCA could think about its role in supporting innovative carbon neutral businesses, by providing a lead market and minimum volume for their products, enabling them to scale with confidence.</p>
<p>Fiscal Policy <i>Setting local taxes, subsidies and expenditure</i></p>	<p>One tax that many city-region governments have introduced is a congestion charge. GM residents rejected the idea of a congestion charge that would apply to private vehicles in a 2008 referendum. However, new plans for Clean Air Zones, which would charge HGVs, buses, taxis and vans, but not individual cars, have since been announced.</p> <p>GMCA could also explore whether tax breaks could promote necessary changes in other areas of the mission – for example, by reducing business rates for zero-waste/plastic-free retailers and grocers. Although this may be an effective way of supporting the mission, two barriers mean that 'tax changes are fraught with difficulty,' according to the GMCA team. First, new taxes could not be introduced without the explicit permission of central government and business rate changes would have to be agreed by the local authorities. Second, even if there are opportunities for setting taxes and subsidies (for example, to incentivise retrofit by adding a surcharge to less energy efficient buildings), there is a high political barrier.</p>

Role and powers	Manifestation at GMCA
<p>Planning authority</p> <p><i>Setting the rules of future development to ensure carbon neutrality</i></p>	<p>Greater Manchester is forecast to have 233k new homes by 2035. The huge amount of development in the last five years, especially in Manchester City Centre, has struggled to deliver well-built, net-zero, affordable homes. The GM Spatial Framework (2019-37) and GM Housing Strategy (2019-24) both set out a vision for a new approach to development – the former sets out ambitions and policies regarding sustainability and green space, and the latter highlights the importance of retrofit and building net-zero new homes, and commits to exploring the idea of community-led housing development. While local authorities make individual planning decisions, they are based on the GM-wide standards set out in the spatial framework – in particular the commitment that by 2028 new builds will be net-zero carbon.</p> <p>However, neither seem to challenge the paradigmatic model of urban development in use today, in which large, for-profit property developers are given a central role. This may make it harder to deliver on the ambition of net-zero homes, as incentives between those developers and GMCA may not always be aligned. One interviewee emphasised that trying to set standards beyond the national standards may impact the commercial viability of projects. This reinforces the idea that GMCA may need to explore a different economic model of development – if the question becomes ‘cheap or green’ then it will be difficult to make the rapid progress on affordable, sustainable homes that GM needs.</p>
<p>Regulator</p> <p><i>Setting local laws and fines</i></p>	<p>Thus far, GMCA has not adopted extensive regulatory changes as a means of progressing the mission. For example, within the mobility challenge the focus is on providing EV charging points and additional cycling routes, rather than regulating car use. Other cities, however, have taken more drastic steps to reduce car emissions, such as Oslo banning city centre parking and Barcelona creating ‘superblocks’ as car-free zones. In part, this is driven by different governance arrangements – changes to parking and pedestrianisation would require the approval of the local authority, rather than being decided by GMCA.</p> <p>More broadly, regulation could offer benefits in two ways. First, it can be a key driver of innovation – tighter regulations will provide more incentive for firms and consumers to change business models and behaviours. Second, regulation will be critical for the natural capital team to create new investable assets and markets. This may produce additional revenue streams for GMCA, supporting needed investment in the mission.</p>

6. Conclusion

Solving climate change requires cities and local governments to utilise roadmap policymaking approaches that can provide a robust guide for long-term systems change. As cities across the globe have dramatically elevated their ambitions for tackling the climate crisis, including in the UK, where 308 local governments have declared a climate emergency (Climate Emergency UK 2021), there is an urgent need for new frameworks and methodologies to be used that can fully enable cities to harness their available tools and capabilities for accelerating climate action. While local government organisations have a critical role in solving the climate crisis, shaping the market towards long-term ambitious carbon reduction targets, creating a new investable landscape and utilising policy to enable experimentation alone will not be enough to solve the challenge. Facilitating the green transition to clean growth local economies demands mobilising the entire innovation ecosystem, across sectors and between a diverse groups of actors where private investment and activity can be tilted towards publicly determined climate ambitions set to maximise public value. Mission-oriented innovation is one policy roadmap approach that offers local government organisations tools to reframe and overcome existing institutional siloes, and provides the dynamic capabilities needed to support the forms of bottom-up experimentation and risk-taking needed to foster innovation for addressing the climate crisis.

GMCA is the first local government organisation to use mission-oriented innovation and begin using the approach to deliver its particular green transition target. The ways in which GMCA has governed, financed, and used different powers and roles to facilitate its missions provides important lessons for other cities and regions that are beginning to use mission-oriented innovation as a roadmap for tackling their own clean growth and green transition objectives. While GMCA has demonstrated that a bold, politically resilient clean growth mission can attract a broad group of actors to collectively undertake ambitious action, this case has also shown that unlocking the transformational potential of missions will require significant dynamic capabilities, along with appropriate resourcing. Although GMCA's experience does not provide transferable best practices for other local governments or point toward silver bullets, the analysis of this one case study provides key insights and points of learning for others.

Facilitating the green transition at the pace and scale required to achieve a low carbon future consistent with the goals set out in the Paris Agreement is an enormous challenge for cities that are on the frontlines of the climate crisis. By using mission-oriented innovation for delivering carbon neutrality, local governments can use the approach as a roadmap for bringing their entire city-systems into action, galvanising diffuse energy and excitement from diverse actors towards their specific inspirational goal. GMCA's mission activities have demonstrated that the approach can support broad integrated action across stakeholder groups, from the public and private sectors to volunteer organisations and charities, to academia to citizens. However, mission-oriented innovation will only meaningfully support the green transition if local government organisations gain and utilise particular skills, capability, resources and capacities.

References

- Arslan, K., Avery, H., Harvey, E. and Jude, R. (2020). *The role of a UK National Infrastructure Bank in a Green Recovery*. Green Finance Institute. Available from: <https://www.greenfinanceinstitute.co.uk/wp-content/uploads/2020/12/GREEN-FINANCE-INSIGHTS-PAPER-1.pdf>
- Anthesis Group. What is SCATTER. Available from: <https://scattercities.com>
- ARUP. (2020). *Bristol One City Climate Strategy*. Available from: <https://www.bristolonecity.com/wp-content/uploads/2020/02/Bristol-economy-carbon-footprint.pdf>
- Bachra, S., Lovell, A., McLachlan, C. and Mae Minas, A. (2020). *The co-benefits of climate action: Accelerating city level ambition*. Available from: https://6fefcbb86e61af1b2fc4-c70d8ead6ced550b4d987d7c03fcdd1d.ssl.cf3.rackcdn.com/cms/reports/documents/000/005/329/original/CDP_Co-benefits_analysis.pdf?1597235231
- Bounds, A. (2020). Investing in infrastructure alone won't level up UK, economists say. *Financial Times*. Available at: <https://www.ft.com/content/4c9071ed-f187-48a0-8b07-e4bf191177d6>
- Burnham for Mayor. (2017). Our Manifesto for Greater Manchester. Available from: https://d3n8a8pro7vhmx.cloudfront.net/andy4mayor/pages/68/attachments/original/1489493923/Andy_Burnham_Manifesto_A4_12pp_copy.pdf?1489493923
- CLES – Centre for Local Economic Strategies. (2019). *How we built community wealth in Preston: Achievements and lessons*. Available from: https://cles.org.uk/wp-content/uploads/2019/07/CLES_Preston-Documents_WEB-AW.pdf
- Climate Bonds Initiative. (2018). Can US municipals scale up green bond issuance? Likely, “yes”. Available from: https://www.climatebonds.net/files/reports/us_muni_climate-aligned_bonds_11-07-2018.pdf
- Climate Emergency UK. (2021). List of councils who have declared a climate emergency. Available from: <https://www.climateemergency.uk/blog/list-of-councils/>
- Coyle, D., Flanders, S., Glaeser, E., Mazzucato, M., Overman, H. and Singh, D. (2019). *Greater Manchester Independent Prosperity Review*. Available from: https://www.greatermanchester-ca.gov.uk/media/1826/gmis_reviewersreport_final_digital.pdf
- Elzen, B., Geels, F. W. and Green, K. (eds.). (2004). *System innovation and the transition to sustainability: theory, evidence and policy*. Edward Elgar Publishing.
- European Commission. (2019). The European Green Deal. Available from: <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1576150542719&uri=COM%3A2019%3A640%3AFIN>
- Ferraro, F., Etzion, D. and Gehman, J. (2015). Tackling grand challenges pragmatically: Robust action revisited. *Organization Studies*, 36(3), pp. 363–390.
- Gaddy, B. E., Sivaram, V., Jones, T. B. and Wayman, L. (2017). Venture capital and cleantech: The wrong model for energy innovation. *Energy Policy*, 102, pp. 385–395.
- Global Impact investing Network (2020). What you need to know about impact investing. Available from: <https://thegiin.org/impact-investing/need-to-know/>
- Goodsell, C. T. (2011). Mission mystique: Strength at the institutional center. *The American Review of Public Administration*, 41(5), 475–494.
- Greater Manchester Combined Authority. (2012). *Greater Manchester City Deal*. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/221014/Greater-Manchester-City-Deal-final_0.pdf

- Greater Manchester Combined Authority. (2018). *Greater Manchester's Springboard to a Green City Region*. Available from: <https://www.greatermanchester-ca.gov.uk/media/1317/springboard-report.pdf>
- Greater Manchester Combined Authority. (2019). 5-Year Environment Plan for Greater Manchester. Available from: https://www.greatermanchester-ca.gov.uk/media/1986/5-year-plan-branded_3.pdf
- Greater Manchester Combined Authority and Department for Business, Energy and Industrial Strategy. (2019). Greater Manchester Local Industrial Strategy. Available from: <https://www.greatermanchester-ca.gov.uk/media/2132/gm-local-industrial-strategy-web.pdf>
- Greater Manchester Combined Authority. (2020). GM Environment Fund Update. Available at: <https://democracy.greatermanchester-ca.gov.uk/documents/s8616/15%20GM%20Environment%20Fund%20Update.pdf>
- Harris, S., Weinzettel, J., Bigano, A. and Källmén, A. (2020). Low carbon cities in 2050? GHG emissions of European cities using production-based and consumption-based emission accounting methods. *Journal of Cleaner Production*, 248, 119206
- Hooghe, L., Marks, G. and Schakel, A. H. (2020). Multilevel governance. *Comparative Politics*, 5, pp. 193–210.
- Institute for Government. (2020). Elections 2021: metro mayors. Available from: <https://www.instituteforgovernment.org.uk/explainers/elections-2021-metro-mayors>
- International Energy Agency. (2020). Green stimulus after the 2008 crisis. Available from: <https://www.iea.org/articles/green-stimulus-after-the-2008-crisis>
- Johns, M. (2020). *10 years of austerity: Eroding resilience in the North*. IPPR North report. Available at: <https://www.ippr.org/files/2020-06/10-years-of-austerity.pdf>
- Kattel, R. and Mazzucato, M. (2018). Mission-oriented innovation policy and dynamic capabilities in the public sector. *Industrial and Corporate Change*. 27(5), pp. 787–801.
- Kim, K. G. (2018). Planning models for climate resilient and low-carbon smart cities: An urban innovation for sustainability, efficiency, circularity, resiliency, and connectivity planning. In *Low-carbon smart cities*. Springer, Cham., pp. 77–85
- Kuriakose, J., Anderson, K., Broderick, J. and McLachlan, C. (2018). *Quantifying the implications of the Paris Agreement for Greater Manchester*. Tyndall Centre for Climate Change Research. Report commissioned by Greater Manchester Combined Authority. Available at: https://www.research.manchester.ac.uk/portal/files/83000155/Tyndall_Quantifying_Paris_for_Manchester_Report_FINAL_PUBLISHED_rev1.pdf
- Ladner, A., Keuffer, N. and Baldersheim, H. (2016). Measuring local autonomy in 39 countries (1990–2014). *Regional and Federal Studies*, 26(3), pp. 321–357.
- Laplane, A. and Mazzucato, M. (2019). *Socialising the risks and rewards of public investment: Economics, policy and legal issues*. Available at: https://www.ucl.ac.uk/bartlett/public-purpose/sites/public-purpose/files/socialising_risks_and_rewards_final.pdf
- Lewis, A. (2017). PE hold times keep going up. Pitchbook. Available at: <https://pitchbook.com/news/articles/pe-hold-times-keep-going-up>
- Mazzucato, M. (2018). Mission-oriented innovation policies: challenges and opportunities. *Industrial and Corporate Change*, 27(5), pp. 803–815.
- Mazzucato, M. (2019). *Governing Missions in the European Union*. Independent Expert Report. Available from: https://www.kowi.de/de/Portaldaten/2/Resources/Horizon2020/mazzucato_report_2019.pdf

- Mazzucato, M., McPherson, M. and Hill, D. (2019). *A Mission-oriented Approach to Clean Growth*. Institute for Innovation and Public Purpose. Report commissioned by Greater Manchester Independent Prosperity Review. Available from: <https://www.ucl.ac.uk/bartlett/public-purpose/publications/2019/sep/mission-oriented-approach-clean-growth>
- Oldham Council. (2020). Help to heat your home. Available from: https://www.oldham.gov.uk/info/200258/housing_benefit_grants_and_loans/1979/help_to_heat_your_home
- Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st-century economist*. Chelsea Green Publishing.
- Rosenzweig, C., Solecki, W. D., Romero-Lankao, P., Mehrotra, S., Dhakal, S. and Ibrahim, S. A. (eds.). (2018). *Climate change and cities: Second assessment report of the urban climate change research network*. Cambridge University Press.
- Sandford, M. (2020). *Local government in England: Capital finance*. Briefing Paper for UK House of Commons. Available at: <https://commonslibrary.parliament.uk/research-briefings/sn05797/>
- Treger, C. et al. (2019). *Building Civic Capital*. Available at: [https://uploads-ssl.webflow.com/5ddb6d8c8721f339f8284ef/5ea18eb53e44c4667e1cfebf_0411_Building%20Civic%20Capital%20\(compressed\).pdf](https://uploads-ssl.webflow.com/5ddb6d8c8721f339f8284ef/5ea18eb53e44c4667e1cfebf_0411_Building%20Civic%20Capital%20(compressed).pdf)
- UCL Institute for Innovation and Public Purpose (2020). Camden Renewal Commission. Available from: <https://www.ucl.ac.uk/bartlett/public-purpose/research-projects/2021/mar/camden-renewal-commission>
- University of Exeter. (2014). Why plants in the office make us more productive. Available from: <https://www.sciencedaily.com/releases/2014/09/140901090735.htm>
- UK Department for Business, Energy and Industrial Strategy (BEIS). (2018). *Industrial Strategy: Building a Britain fit for the future*. Available from: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/664563/industrial-strategy-white-paper-web-ready-version.pdf
- Varro, L., Beyer, S., Journeay-Kaley, P and Gaffney, K. (2020). Green stimulus after the 2008 crisis. Available from: <https://www.iea.org/articles/green-stimulus-after-the-2008-crisis>

IIPP Working Papers and Policy Reports referenced in this paper.

- IIPP WP 2020-16 [Public wealth funds: Supporting economic recovery and sustainable growth.](#)
Dag Detter, Stefan Fölster and Joshua Ryan-Collins
- IIPP WP 2020-14 [Mission Italia: Investment, innovation and imagination.](#) Mariana Mazzucato
- IIPP WP 2019-09 [Socialising the risks and rewards of public investments: Economic, policy and legal issues.](#) Andrea Laplane and Mariana Mazzucato
- IIPP WP 2019-04 [A Mission-Oriented UK Industrial Strategy.](#) UCL Commission for Mission-Oriented Innovation and Industrial Strategy (MOIIS) co-chaired by Mariana Mazzucato and David Willetts
- IIPP WP 2019-02 [A mission-oriented framework for the Scottish National Investment Bank.](#)
Mariana Mazzucato and Laurie Macfarlane
- IIPP WP 2018-07 [Movements with missions make markets.](#) Charles Leadbeater
- IIPP WP 2018-06 [The economics of change: Policy and appraisal for missions, market shaping and public purpose.](#) Rainer Kattel, Mariana Mazzucato, Joshua Ryan-Collins and Simon Share
- IIPP PB 2019-09 Missions: [A beginner's guide.](#) Mariana Mazzucato and George Dibb
- IIPP PB 2019-01 [Patient Finance for Innovation-Driven Growth.](#) Marianna Mazzucato and Laurie Macfarlane
- IIPP PB 2019-04 [The Green New Deal: A bold mission-oriented approach.](#) Marianna Mazzucato and Martha McPherson

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