

GMCA Sector Development Plan: Low Carbon

How This Plan Will Work

The Purpose of This Plan

This plan - as well as corresponding plans for Greater Manchester's (GM) other frontier sectors (Advanced Materials & Advanced Manufacturing, Health Innovation & Life Sciences, Digital, Cyber & AI, Creative & Media) – serve several purposes outlined below:

- **To provide strategic direction for GMCA, local partners,** institutions and businesses to work towards the development of each of Greater Manchester's Frontier Sectors, including shaping thinking regarding future funding utilisation (e.g. Industrial Strategy Zone phase 2). Plans will be "living documents", that will have an iterative approach to how they are written and implemented.
- **To identify intervention priorities** which the evidence suggests will support the development of the sector including areas such as physical developments, skills, business support, research and innovation programmes, or non-financial sector development initiatives and partnership models.
- **To provide an updated understanding of the state of our frontier sectors** including current and planned activity that is taking place within them, which were last reviewed as part of the Local Industrial Strategy process.
- To support the development of the Local Growth Plan and the National Industrial Strategy and its "targeted Sector Plans"
- To map out key inter regional partnerships and supply chain dependencies and links to National and international initiatives.

We know that there is deep [connections](#) between our frontier sectors, be it in terms of supply chains, or technologically enabling one another, meaning these plans need to speak to one another.

In this regard these plans include actions that are shared across all of these plans, as well as activity which will inherently benefits the other sectors, which we need to ensure we are continuing to understand as best as possible.

Our Approach

One of GM's key strengths, underpinning its success in recent years in increasing productivity, driving growth and investment in its Frontier Sectors and making the clear case for the benefit of greater devolution to empower place led control is its partnership working across the public, private and academic sectors.

The ongoing development of devolution of powers and control of budgets has given GM greatly increased control of how it can deliver some of the changes needed to realise our vision and strategic priorities. However, in some areas this control remains limited so our ability to work collaboratively with partners to develop compelling cases for funding, more powers and control, and to develop collaborative, innovative ways of achieving our goals, will remain a primary element of how we deliver this plan.

There are therefore some guiding approaches that will sit as overarching principals for how this plan will work.

- This is a living document, that will have an iterative approach to how it is written and implemented. As befits a sector that is so rooted in new developments and innovation, the plan cannot be set in stone, or it will rapidly become irrelevant.
- The Plan, from its vision, through its strategic priorities, to the interventions that deliver these, will be co-designed with the sector, and we will continue to strengthen our sectoral engagement as future iterations of these plans are developed
- Where possible, this will focus on impact and outcomes, over realistic timescales, rather than the delivery of blunt outcomes to arbitrary, short deadlines.
- Governance and oversight will be proportionate, flexible and responsive, rather than imposing rigidity, bureaucracy and excessive reporting requirements.

We will ensure that different parts of the ecosystem work together and that various interventions complement and support one another. To unlock new employment spaces for growth, we must make good use of existing assets, building key national relationships to continue to position the NW as a hub. In addition, we must ensure the availability of necessary skills, transport to get people there, leadership to communicate the vision and attract interest, and business support including specialist investment mechanisms to help businesses locate and thrive. These components complement each other, and we will work to break down silos and take a strategic approach to implementing, prioritizing, and sequencing interventions to create the most impact for the sector.

[Resources \(incl. the Industrial Strategy Zone\)](#)

The Industrial Strategy Zone programme (formally Investment Zone Programme), launched at the Spring Budget 2023¹, gives GM a £160 million envelope over 10 years to catalyse local growth and investment across the Advanced Materials and Advanced Manufacturing sector, which as part of this includes a number of projects and programmes relating to the Low Carbon sector. As well as being able to utilise grant funding for projects GM will retain the growth in business rates for 25 years across Sister and Atom Valley and can reinvest these into advanced materials and advanced manufacturing activity. GM has outlined its plans for the first 5 years of this programme², encompassing £80 million of grant funding. This sector development plan, and future iterations of this plan will help inform thinking regarding future Industrial Strategy Zone funding allocations, as well as other funding streams.

This plan will be supported by resources allocated via the integrated settlement and local budget setting, with an initial £1 million allocated over the next 2 years to support activity across all our frontier sectors. Other funding sources also support the activity outlined in this plan, including government funding supporting the GM Innovation Accelerator programme and the Local Innovation Partnership Fund. The National Industrial Strategy launched in June 2025 announced a set of national Sector Plans and funding for sector-led growth that included the Clean Energy sector, and GMCA will actively pursue routes to aligning these national resources with the priorities in this plan and private sector investment opportunities. The Low Carbon sector is also supported by the £7 million Net Zero

¹[UKGOV, Spring Budget 2023](#)

²[GMCA, Greater Manchester Investment Zone Prospectus \(2024\)](#)

Accelerator, a DESNZ-funded project that is looking to build a £1 billion pipeline of low-carbon projects by March 2026.

Low Carbon – Plan on a Page

Sector Definition

Businesses and activities involved in reducing carbon emissions, enhancing energy efficiency, generating renewable energy, managing resources sustainably, and delivering products and services aimed at environmental protection

Current State of the Sector

- Largest Low Carbon sector outside of London and the South-East, with key sub-sector strengths in Building Technologies and Low Carbon Consultancy
- Additional strengths in Waste, Recycling & Circular Economy, and Renewable Energy
- World-class research & innovation assets across all GM units (e.g., High Voltage Lab, Tyndall Centre, Dalton Nuclear, Fuel Cell Innovation Centre, Energy House)
- Green skills shortages and the need to develop supply chains for tech adoption (e.g., retrofit)

Strengths

- Leadership and collaboration
- Diverse & interconnected system
- Innovation and R&D capacity
- Retrofit & energy efficiency activity

Threats

- Policy and regulatory instability
- Insufficient investment & funding gaps
- Inadequate infrastructure for new tech
- Skills shortages and worker mismatch
- International competition

Opportunities

- Housing/retrofit activity & projects
- Circular economy ecosystem
- Heat networks; onshore wind
- NZ Accelerator – aggregate projects
- Overarching green skills strategy

Weaknesses

- Skill gaps and workforce shortages
- Fragmented supply chains
- Gaps in integration & data utilisation
- Financing challenges
- Few anchor assets (e.g., nuclear)

Infrastructure and physical development

- Shortage of quality laboratory space in Manchester city centre cited as a potential factor holding back development of the Low Carbon sector in GM
- Sector development can be stimulated via housing development – retrofit, new homes
- Sector development can be stimulated by low carbon infrastructure – including HyNet coming into Western Gateway, and new Heat Networks (particularly Oldham and Stockport)
- May be a need to aggregate these types of project to create demand certainty/pipeline

Vision for the sector

GM is a leader in Low Carbon innovation, known for advanced solutions, research and global partnerships. This will transform industries, strengthen local supply chains, and develop a skilled, inclusive workforce. Sustainable investments and strategic public procurement will grow the Low Carbon market, attract investment, and promote innovation. A supportive policy and financial framework will help meet environmental targets and ensure sustainable economic prosperity, creating high-quality jobs in a resilient Low Carbon economy.

Strategic Priorities

- 1 – **Drive Low Carbon innovation and technological leadership:** position GM as a national and global hub for Low Carbon innovation, research, and technology development, attracting FDI and building international trade partnerships
- 2 – **Transform industries and build sustainable local supply chains:** accelerate the decarbonisation and transformation of GM's industries by developing sustainable local supply chains and supporting businesses to diversify into the Low Carbon sector
- 3 – **Build a highly skilled, diverse, and inclusive Low Carbon workforce:** align education, training, and workforce development programmes with industry needs, creating clear pathways into greener careers and supporting lifelong learning
- 4 – **Develop resilient, sustainable infrastructure and unlock market opportunities through public procurement:** build a robust, future-proofed infrastructure that supports GM's NZ ambitions whilst leverage public procurement to stimulate demand
- 5 – **Foster policy and regulatory alignment, finance, and investment:** create a supportive policy and regulatory environment that fosters growth and productivity, underpinned by a robust financial framework to secure long-term investment

Key Actions

- Maximise investment in GM's grid and renewables, and ensure this translates into good jobs
- Explore the potential for new business support offerings (e.g., industrial decarb, circular economy), and sector-specific support (e.g., electricity networks, heat networks, wind)
- Work with local partners to proactively engage innovation bodies on identified gaps
- Expand supply chain mapping into sectors additional to those in the Net Zero Accelerator
- Bring together local and national funding initiatives to engage local investment community
- Explore opportunities to build co-benefits (e.g. health) into investments at an early stage
- Work with regional and national bodies to create better data on supply-demand mismatches

Sector Definition

There is no single or widely agreed definition of the Low Carbon sector at either a national or international level. Due to the absence of relevant specific Standard Industrial Classification (SIC) codes many businesses within the sector might not explicitly identify as Low Carbon, and the sector is constantly changing and growing. Four leading methodologies for defining and measuring the sector are:

- **Low Carbon and Environmental Goods and Services (LCEGS) (kMatrix)**: defines the sector as encompassing all economic activities involving low-carbon technologies, environmental goods and related services that promote environmental sustainability and support the transition to a low-carbon economy, with data gathered through a combination of market analysis, industry classification, and supply chain mapping
- **Low Carbon and Renewable Energy Economy (LCREE) (ONS)**: captures economic activities that contribute to reducing carbon emissions and generating renewable energy, comprising 17 sub-sectors are six main categories
- **Environmental Goods and Services Sector (EGSS) (Eurostat)**: includes areas of the economy engaged in producing goods and services for environmental protection purposes, as well as those engaging in conserving and maintaining natural resources. It is primarily used by the EU, and split into 17 sub-sectors, however for the UK it is split across 16 sectors across Classification of Environmental Protection Activities (CEPA) and Classification of Resource Management Activities (CReMA)
- **Real-Time Industrial Classifications (RITC) (The Data City)**: a substitute for more traditional Standard Industrial Classification (SIC) codes, identifying and categorizing businesses and activities that align with carbon reduction, environmental sustainability, and net-zero goals across 16 sub-sectors

Each of these definitions varies in terms of scope and methodology, with there being strengths and weaknesses to each one. However, because the LCEGS definition is used by Green Economy in their 2022 report 'Greater Manchester's Green Economy: Sector Mapping Study', and because The Data City's RITC definition includes modern web-scraping tools, we have defined the Low Carbon sector by combining those two methodologies as follows:

"Businesses and activities involved in reducing carbon emissions, enhancing energy efficiency, generating renewable energy, managing resources sustainably, and delivering products and services aimed at environmental protection".

We have used LCEGS and RTIC data and Location Quotient (LQ) analysis to identify key sub-sector and regional strengths in the Low Carbon sector in Greater Manchester, as set out later in this plan.

Strategic Context

Why This is a Frontier Sector

By Frontier Sector we mean a sector that:

- Has nationally and internationally recognised R&D strengths and complementary industrial / commercial assets
- Is innovative, bringing about new ideas, methods, products, services, or solutions and creating the jobs of the future
- Is high productivity, as well as helping drive productivity across the economy through the adoption of their innovations

These sectors contain multiple clusters where technologies, assets and businesses combine in a place, creating potential for innovation and new markets or knowledge that increases the value being created in the cluster and the competitiveness of the wider sector in the region.

Greater Manchester's vision for the Low Carbon sector is to establish itself as a leading hub for clean energy innovation, sustainable industries, and climate solutions, driving the transition to net-zero while creating a resilient, high-value economy. The city-region is uniquely positioned to lead this transformation, leveraging its globally recognised expertise in energy systems, hydrogen technologies, and Low Carbon infrastructure, alongside a growing base of pioneering businesses and research institutions. Anchored within a wider regional ecosystem of energy innovation and clean growth, Greater Manchester combines a strong industrial legacy with cutting-edge R&D capabilities and a supportive policy environment. This convergence of assets and ambition provides the foundation for a thriving Low Carbon cluster, delivering productivity improvements, high-quality jobs, and scalable solutions that contribute to national and international decarbonisation efforts.

The 2025 refresh of the GM Science and Innovation Audit has confirmed that Low Carbon is still an opportunity for innovation led growth, with energy Infrastructure and Transition being identified as one of Greater Manchester's 7 Priority capabilities. This was assessed against the criteria that "there is outstanding knowledge capability in GM universities & a realistic prospect of this being translated into superior economic growth (new or additional) in GM's private sector, or that existing strong sectors and/or high growth sectors in GM have strong demand for the knowledge capability area in view, irrespective of GM's universities' comparative advantage

Alignment

Several of the GMCA's economic strategies over the past ten years have identified the strategic importance and economic potential of the Low Carbon sector to Greater Manchester, such as:

- **GM and Cheshire East Science & Innovation Audit (2016):** highlights energy and Low Carbon technologies as one of the region's high-growth sectors, emphasizing the need to harness local expertise and innovation capabilities to address the transition to a net-zero economy
- **GM Independent Prosperity Review (2019):** identifies the Low Carbon sector as a crucial area for driving economic growth while addressing climate change. It emphasizes the need for investments in clean technologies and sustainable practices to support Greater Manchester's ambition for inclusive and environmentally sustainable prosperity

- **GM Local Industrial Strategy** (2019): places a strong focus on clean growth, highlighting the importance of developing the Low Carbon sector and leveraging innovation in energy technologies, and how supporting businesses and industries to transition towards net-zero can be a core driver of economic growth
- **GM Independent Prosperity Review: One Year On** (2020): reiterates the importance of the Low Carbon sector for recovery and long-term resilience. It underscores the region's commitment to accelerating carbon-neutral initiatives as part of an inclusive economic recovery plan
- **GM Independent Prosperity Review: Evidence Update** (2022): continues to prioritize the Low Carbon sector as essential for addressing productivity challenges and health inequalities. It emphasizes clean growth as a vital strategy for driving innovation and improving overall economic performance
- **GM Innovation Plan** (2022): positions Low Carbon technologies as a cornerstone of Greater Manchester's innovation ecosystem. It focuses on creating a connected framework to accelerate advancements in net-zero solutions, fostering collaborations between industries, universities, and government to drive green innovation and economic growth
- **GM International Strategy 2022-2025** (2022): supports the Low Carbon agenda by promoting GM's strengths in clean growth and net-zero technologies on an international scale. It seeks to attract global investment and partnerships in sustainable industries while positioning the city-region as a leader in the global transition to a net-zero economy

The 2023 Trailblazer Devolution Deal³ with Government has provided Greater Manchester with the opportunity to take greater control over the levers of economic growth and prosperity. The “Local Growth & Place” functional pillar in the Settlement will include investment that can support the growth of our economy, including our Frontier Sectors.

In January 2025 Greater Manchester set out its approach to Delivering our Growth Ambition⁴ spearheaded by Greater Manchester's Growth Locations, as well as launching the integrated pipeline⁵ which captures the projects and interventions needed to deliver the full scale of our ambitions through investment in physical infrastructure including our strategic employment and housing sites, town centres and city centre developments over the next 10 years bringing them together for the first time into a single platform.

In June 2025 the UK's Industrial Strategy 2025⁶ was launched, which sets out a 10-year plan to grow future industries, including Advanced Manufacturing, Clean Energy, and Digital Technologies. The Clean Energy Industries Sector Plan⁷, published alongside the strategy, includes several ambitious, high-profile policies and programmes that this Sector Development Plan can leverage and engage with, which will be able to build upon further when the Government publish the Clean Energy Industries Workforce Strategy in September 2025, the Warm Homes Plan in October 2025, and the

³ [UKGOV, Trailblazer Devolution Deal \(2023\)](#)

⁴ [GMCA, Greater Manchester's Approach to Delivering our Growth Ambition \(2025\)](#)

⁵ [GMCA, Greater Manchester Integrated Pipeline \(2025\)](#)

⁶ [UKGOV, The UK's Modern Industrial Strategy](#)

⁷ [UKGOV, UK Government's Clean Energy Industries Sector Plan \(2025\)](#)

Circular Economy Strategy (plus the Circular Economy Roadmap for Clean Energy Industries) later in the year.

The Industrial Strategy 2025 also included an announcement that the Industrial Strategy Council will be based in Greater Manchester. Greater Manchester will continue to maximise opportunities for the city region that arise from the national industrial strategy and its corresponding sector plans.

In July 2025 a refresh of the Greater Manchester Strategy⁸ was published. The Greater Manchester Strategy 2025–2035 sets out a bold 10-year vision for a “thriving city region where everyone can live a good life. The strategy is structured around seven mission-led workstreams, including inclusive economic growth, net zero, and innovation. This Sector Development Plan will also form a foundational component of Greater Manchester’s emerging Local Growth Plan (due to be published Autumn 2025). The Growth Plan will consolidate strategic priorities across sectors and geographies, leveraging devolved powers to deliver inclusive, innovation-led growth.

Technology Families

In 2021 the government published the UK Innovation Strategy⁹. The strategy contained a focus on missions & technologies that will stimulate innovation to tackle major challenges faced by the UK and the world, and drive capability in key technologies where the UK is considered to have an ‘industrial and R&D edge’. Seven technology families were identified in the strategy, of which three listed below were adopted in the GM Innovation Plan due to GM’s research, development, and innovation strengths, and for their cut across our Frontier Sectors in terms of potential applications.

- **Sustainable Advanced Materials:** Within GM, Sustainable Advanced Materials form a pivotal segment of the £49 billion global Advanced Materials market, projected to double by 2026. These materials play a crucial role in advanced manufacturing, net zero initiatives, foundational industries, and health innovation & life sciences with opportunities in industrial coatings, construction materials, textiles, acoustics, and the sustainable production of batteries. Moreover, they facilitate breakthroughs in health innovation, such as wearables and biosensors.
- **Artificial Intelligence, Digital and Advanced Computing:** The landscape of digital technology in GM is expansive and rapidly growing. Artificial Intelligence (AI) is anticipated to revolutionize industries globally, set to reach a market value of \$294 billion by 2026. The Immersive Tech Economy, forecasted at £130 billion by 2023, opens avenues in manufacturing, construction, defence and security, life sciences, education, and training. AI presents a challenge in terms of electricity supply / grid capacity, but also an opportunity in terms of heat sources (e.g., data centres for small district heat networks)
- **Diagnostics & Genomics:** In GM, Diagnostics & Genomics present a burgeoning opportunity. With 31 Genomics companies employing over 2,000 people, there's clear potential for growth. The intersection of genomics, diagnostics, AI, advanced computing, and sustainable advanced materials offers spillover benefits, fostering innovations in analytics, medicine, and diagnostic devices. Advances in personalized healthcare not only reduce NHS waiting lists but also address health inequalities, improving health outcomes for the residents of GM. The region's focus on R&D and technology has garnered significant funding, as evidenced by the NIHR grant of £59.1 million to the Manchester Biomedical Research Centre. This investment enhances the GM’s capacity to

⁸ [GMCA, Together We Are Greater Manchester \(2025\)](#)

⁹ [UK Innovation Strategy \(2021\)](#)

conduct cutting-edge clinical trials, contributing to advancements in healthcare.

Wider Context

The 2024 Labour Party Manifesto places the Low Carbon sector at the heart of its vision for the UK's future, with the goal of transforming Britain into a clean energy superpower by 2030. Central to this vision is achieving a zero-carbon electricity grid to reduce energy bills, create high-quality jobs, and enhance national energy security. This ambition will be driven by a series of major policy initiatives, including the establishment of GB Energy and the National Wealth Fund, both aimed at accelerating the deployment of clean energy technologies and supporting key decarbonization industries.

The manifesto also addresses key areas of the energy transition, including investment in nuclear power to secure long-term energy stability, a British Jobs Bonus scheme to incentivize companies to create good-quality jobs in UK industrial heartlands, and a commitment to upgrading the national energy infrastructure to support the expansion of renewable power and industrial electrification. The Warm Homes Plan will double planned investments (allocating £6.6bn to retrofit 5m homes with insulation, solar, and low-carbon heating), while a Carbon Border Adjustment Mechanism (CBAM) will protect British industries facing high energy costs as they decarbonize.

Low Carbon is also at the heart of Labour's mission to kickstart economic growth, recognizing that addressing climate change, enhancing energy security, lowering bills, and promoting sustainable growth are interlinked priorities. Key policies include the creation of a National Infrastructure and Service Transformation Authority (NISTA) to set strategic priorities and oversee major projects, new National Policy Statements to streamline the planning process, and targeted measures to remove barriers for emerging technologies like AI and data centres. To boost innovation and resilience, the Government will favour ten-year R&D budgets, simplify procurement, and create a Regulatory Innovation Office to foster a pro-innovation environment.

The new Government quickly set to work on the above following its election in July 2024, including publishing GB Energy's founding statement (and announcing a partnership with The Crown Estate to boost offshore wind capabilities), lifting the effective ban on new onshore wind projects in England, approving three new solar farms that could power 400,000 homes, streamlining the approval processes under the National Planning Policy Framework, launching the National Energy System Operator (NESO), bringing the Energy System Operator into public ownership (positioned to work alongside GB Energy to connect new projects to the grid), and introducing Strategic Spatial Energy Plans, Centralised Strategic Network Plans, and Regional Energy Strategic Plans to provide a long-term roadmap for the UK's energy infrastructure development through to 2050.

Several key announcements were then included in the Autumn budget 2024, such as an initial £3.4 billion commitment to the Warm Homes Plan over the next three years, £3.9 billion in 2025/26 for CCUS Track-1 projects (following £22bn revenue support over 25 years announced around the same time), £2.7 billion for Sizewell C through to 2025/26, and £2.4 billion over two years for flood defences.

The Government then launched the Clean Power 2030 Action Plan in December 2024, outlining ambitions for 95% of electricity generation from clean sources by 2030 and specific targets for certain sectors / technologies (e.g., 43-50GW offshore wind, 45-47GW solar). Policy announcements to support this included reforms to Contracts for Difference, connections and planning reform, and community benefit

proposals, with NESO setting out the need for a “once-in-a-generation” investment of £40bn p.a. in the electricity grid/system (mostly from private investment).

This was followed up in the recent Spending Review with £13.2 billion for the Warm Homes Plan for 2025-26 to 2029-30, another £9.4 billion capital spend by 2029 for CCS, confirmed £8.3 billion budget for GB Energy (incl. £2.5bn for GB Energy – Nuclear), £2.5 billion for nuclear fusion, £2.6 billion for green transport, and an extra £300 million for offshore wind supply chains.

The UK Industrial Strategy and Clean Energy Industries Sector Plan built on this further, with additional announcements including the launch of a Connections Accelerator Service to support electricity demand projects, exploring a Market Demand Guarantee to stimulate domestic production of key electricity network equipment, a £1 billion Clean Energy Supply Fund under GB Energy, additional support for National Wealth Fund (now £27.8 billion) and the British Business Bank (now £25.6 billion, incl. £4 billion for scale-up/start-ups), and additional support for energy-intensive businesses with electricity costs.

The Government’s 10-Year Infrastructure Strategy – released the following month – further supported this, setting out a £725 billion unified investment envelope over the decade offering predictable, multi-year capital, supported by the establishment of NISTA. Additional measures include an £8 billion Electricity Transmission Partnership with National Grid to expedite £35bn substation infrastructure delivery for 2026-2031, a £7.9 billion flood defence programme for 2026-2030, a £10 billion recycling infrastructure stimulus, the launch of a Digital Infrastructure Pipeline, the development of a Natural Infrastructure Spatial Tool, and the establishment of Spatial Development Strategies.

Finally, the Government’s recent (July 2025) SME strategy - ‘Backing Your Business: Our Plan for Small and Medium Sized Businesses’ - includes Low Carbon-relevant measures, including a national Business Growth Service to provide guidance and signposting to SMEs on energy efficiency measures, low-carbon upgrades, and accessing retrofit incentives & carbon reduction schemes, investment in installer training for retrofit, energy efficiency, and clean energy, and specific support for green construction SMEs and digital tools for carbon accounting and emissions disclosure.

Other additional recent strategies from the Government include the Solar Roadmap (June 2025), the UK Trade Strategy (June 2025), the Technology Adoption Review (June 2025), and the Onshore Wind Strategy (July 2025), with upcoming strategies including the Clean Energy Workforce Strategy (September 2025), the Warm Homes Plan (October 2025), the Circular Economy Strategy (Autumn 2025), and the Carbon Budget Delivery Plan (Q4 2025).

Growth Locations and the GM Investment Plan

GM has identified six “Growth Locations” as prime opportunities for driving transformative change, each with brownfield and greenfield land for housing, employment and industrial growth. This Plan aims to support driving growth in these locations by identifying the physical and wider requirements for the Sector for it to grow, and by providing a joined-up narrative of our ambitions and plan for supporting the Sector going forward.

Through aligned strategy and planning policy, the Growth Locations will support clusters of innovation in all these areas, working with their existing business bases to maximise supply chain linkages, providing local grow-on space of the quality and type needed, and establishing links into communities, schools and town centres to develop the spill-over for all the city region’s residents. This approach

focuses on providing digital connectivity, integrated transport infrastructure, innovation assets, and tailored support to foster innovative businesses.

To support this activity Greater Manchester has developed the Integrated Pipeline¹⁰ which captures the projects and interventions needed to deliver the full scale of our ambitions through investment in physical infrastructure including our strategic employment and housing sites, town centres and city centre developments over the next 10 years, bringing them together for the first time into a single platform. The pipeline will enable residents and businesses to see the type, scale and timing of development that is coming forward and ultimately enable us collectively to make better informed investment decisions

The below sections summarise the vision for each of these as well as how the Low Carbon sector is aligned to the visions for these locations.

Central Growth Cluster

The economic heart of GM, supporting growth in all four Frontier Sectors and accelerating growth across the city region. A globally recognised destination with landmark new neighbourhoods underpinned by growth in sport, culture, leisure and tourism that meets the needs of GM residents as well as an attractor for UK and international visitors. This is the leading area for the knowledge economy and R&D, bolstered by world-class universities and collaboration spaces. Key relevant initiatives taking place within this Growth Location include the development of Sister (in which green investment and climate tech ecosystem company Sustainable Ventures are a tenant) and the Oxford Road Corridor Strategic Regeneration programme including regeneration work on Upper Brook St, Willmott St, Former Elizabeth Gaskell Campus and John Dalton West.

Airport and Southern

The international gateway to the north. A proposition for growth built around digital innovation in the health sector, seeing the transformation of two hospitals (Wythenshawe health campus, and Stepping Hill hospital) accelerated by R&D at MIX Manchester (formally airport city). The Strategic Regeneration Framework for MIX commits to biodiversity and sustainability (incl. delivering at least 10% Biodiversity Net Gain), whilst wider plans include enhanced Metrolink connections.

Western Gateway

The UK's largest sustainable regeneration opportunity. A proposition around clean growth and digital innovation across the logistics sector, enhanced by a unique digital and sport offer, including the expansions of Port Salford and development of Trafford Wharfside. More specifically, plans include employment in low-carbon energy sectors, the development of Port Salford into a tri-modal sustainable freight hub (waterborne, rail, and road), and industrial decarbonisation through cluster partnerships (particularly around hydrogen and CCUS).

Eastern Growth Cluster

Ashton Innovation Corridor is at the forefront of advanced manufacturing and materials innovation. The vision for the Ashton Innovation Park aims to deliver 160,000 sqm of employment floorspace targeted at life sciences, health technologies, advanced manufacturing, and materials

¹⁰ [GMCA, Greater Manchester Integrated Pipeline \(2025\)](#)

science/fabrication. The redevelopment of St Petersfield in Ashton aims to deliver modern, tailored development that will stimulate growth of the Digital, Media, Creative and Tech sector, diversify the economy and foster synergies between manufacturing/engineering and DCT businesses for Industry 4.0 opportunities.

Northeast Growth Corridor

Driving the future of advanced manufacturing and materials processes in the UK through a clustering approach at Atom Valley and partnership with the central cluster. Situated between Rochdale, Bury and Oldham, Atom Valley is a vision to create a vast innovation mega-cluster with the potential 20,000 new jobs and 7,000 new homes through public-private partnership. The plan includes developing 1.2m sqm of logistics and advanced manufacturing space, and government has identified this area as a 'High Potential Opportunity' for scaling up production of lightweight and specialist materials for the transport sector. The delivery of the ambitions of Atom Valley is a collaboration between the GMCA, Rochdale, Bury and Oldham councils, academia, and the private sector. Sustainability is built into its design, with thousands of zero-carbon homes to be delivered and the Sustainable Materials and Manufacturing Centre (SMMC) to be built at Kingsway Business Park by 2026/27.

Northfold

Northfold is at the forefront of future health, with health innovation and food technology driving growth alongside a refreshed sport and cultural offer, and new homes supported by transport infrastructure. The vision includes a concept for a food innovation centre in Northfold, along with a low-carbon transport focus (e.g., active travel and bus journeys) and models for sustainable housing development.

Connections & Applications in Other Sectors

GM's Low Carbon sector is deeply interconnected with the region's other Frontier Sectors. There are particularly strong links with advanced materials and advanced manufacturing, and digital, cyber and AI, but also links with health innovation and life sciences.

Advanced Materials & Advanced Manufacturing

GM's Advanced Materials & Manufacturing sector significantly overlaps with Green Industries, and numerous enterprises in GM develop products enabling Green Industries, like lightweighting and graphene. Sustainable advanced materials serve as crucial supply chain components within Green Industries, presenting opportunities for collaborative growth. Opportunities arise in industrial coatings, construction materials, textiles, acoustics, and the sustainable production of batteries.

New modes of energy generation, storage and use – from hydrogen to fusion power and energy efficient devices will continue to rely on advanced materials and advanced manufacturing techniques. Developing cleaner, sustainable manufacturing via advanced manufacturing techniques also present crossover opportunities for a variety of industries, as well as presenting opportunities to develop cradle to cradle manufacturing processes and circular economy approaches.

Digital, Cyber & AI

Low Carbon technology has huge value to be gained from digital innovations. AI solutions in tech can optimise energy usage, waste management, and environmental monitoring, while cyber capabilities are instrumental in providing the resilient and integrity of energy infrastructure. Increasing reliance

on digital technology has long-term consequences for energy consumption and carbon emissions, with data centre demands for example posing significant challenges for the city-region's net-zero targets, however there are opportunities (e.g., waste heat from heat centre for heat networks).

Current State of the Sector

Key Information

The only available study that specifically defines and measures the (then) current state of the Low Carbon sector in GM is Green Economy's 2022 'Greater Manchester's Green Economy Sector Mapping Study', which uses 2019/20 data from kMatrix's LCEGS definition of the sector. This shows GM as having the largest Low Carbon sector outside of London and the South-East, with c.59k FTEs across c.3.1k companies generating sales of c.£8.6bn, representing 14.5% of GM's business base (on a GVA basis). We are currently in the process of re-commissioning/updating this study with Green Economy, which will use an uptake kMatrix methodology and more up-to-date data.

At a regional level, CBI Economics' 2024 report 'Realising Regional Potential: Identifying and assessing high-value, emerging clusters throughout the UK' uses The Data City's RTIC methodology and data to show the Low Carbon sector as generating in the North West c.£7.4bn of GVA across 1,380 companies, 4.0% of the North West economy, with the sector as a whole for the UK generating c.£84bn of GVA (4.4% of the UK economy) across 21,540 companies (as noted earlier in this Plan there are differences between different methodologies regarding the size of the Low Carbon sector).

Sub-sectors and comparative advantage

Green Economy's 2022 study shows key sub-sectors in which GM has a comparative advantage including energy efficiency, low-carbon technologies, sustainable construction, and environmental consulting, with there being a growing concentration of businesses and employment in areas such as renewable energy, energy storage, and circular economy services (reflecting GM's strengths in sustainable innovation, which itself is supported by a dynamic business base and a network of research institutions). A summary of this (plus a comparison vs. 21 other global cities and forecast growth to 2024/25) is shown below:

Sector	Sales (£m)	Sales vs. 21 cities	GVA (£m)	No. of FTEs	No. of firms	Sales (£m) 2024/25	% growth
Recycling + waste water + waste	1,234	110%	1,519	7,498	377	1,426	15.6%
Building technologies	1,191	132%	1,465	8,418	426	1,699	42.7%
Alternative fuel vehicle & fuels	991	183%	1,216	4,558	244	1,291	30.3%
Wind	985	124%	1,212	8,233	495	1,323	34.3%
Geothermal	769	79%	947	5,939	332	994	29.3%
Carbon finance	510	274%	625	171	8	592	16.0%
Biomass	395	98%	489	2,109	120	507	28.3%
Photovoltaic	380	69%	468	2,791	159	504	32.4%
Sub-total	6,455	133.6%	7,943	39,717	2,161	8,336	29.1%
% of total	88.5%		88.5%	77.3%	78.6%	89.1%	
Other	837	n/a	1,029	11,661	588	1,021	22.0%
Total	7,292	n/a	8,972	51,378	2,749	9,357	28.3%
Total (GM economy)	n/a	n/a	73,451	1,395,155	119,415	n/a	n/a
% of total	n/a	n/a	10.8%	2.8%	1.8%	n/a	n/a

However, given as noted above the differences with kMatrix's LCEGS methodology compared to others, we have used a combination of kMatrix's LCEGS data/methodology and The Data City's RTIC data/methodology – along with Location Quotients (LQs) information – to identify two key comparative Low Carbon sub-sectors in GM, being:

- **Building Technologies:** products and services related to energy efficiency in buildings, such as doors, windows, monitoring & control systems, and insulation/heat retention materials. GM's housing stock and leading devolved and non-devolved activity in this space provides great opportunity for both innovation and scale economy benefits, with the Net Zero Accelerator programme currently showing a social housing retrofit pipeline of c.£3.2bn and a public building decarbonisation pipeline of c.£1.3bn. This will be set out further in the refreshed 'retrofitGM' strategy to be published later this year
- **Low Carbon Consultancy:** consulting and legal services specific to the Low Carbon sector, including advisory and offsetting services, and training and management services. Omidia's report 'Green Finance: The Greater Manchester Opportunity' (Dec-24) sets out how GM is positioning itself as a hub for green finance and green fintech, creating hospitable conditions for green finance investors seeking a base

Stakeholder engagement has also identified two further sub-sectors as comparative GM strengths:

- **Waste, Recycling & Circular Economy:** there are several companies in GM focused on both the physical recycling / reprocessing / reuse of materials, and designing digital tools and systems to enable that, as well as supporting R&D assets at GM's universities (e.g., the Industrial Hub for Sustainable Engineering at the University of Manchester)
- **Low Carbon Energy:** there are several low-carbon energy assets within GM, particularly around district heat networks, which are one of the seven asset classes of the Net Zero Accelerator programme. Work to date on this programme shows a core pipeline covering ten heat network schemes worth c.£0.5bn and a potential long-term pipeline of a further c.£1.5bn, plus a potential rooftop solar pipeline across GM's 3,500 public sector buildings of c.£0.2bn

Sustainable transport has also been identified as a potential future strength and/or enabling sub-sector, with the Net Zero Accelerator showing a potential EV charging infrastructure pipeline of c.£0.4bn. In addition, zero-emission buses represent c.20% of GM's fleet, with there being 2,423 publicly accessible chargers across 1,570 devices at 487 locations. A concession contract has also been submitted to the LEVI programme to expand on-street charging, with TfGM/GMCA also having recently received a £1.8bn allocation from the government for cross-pavement charging solutions.

Geographical Distributions

Green Economy's 2022 report does not include any LA-level data/analysis, however CBI Economics' 2024 report shows as per the figure below that "Net Zero" is the top economic cluster in Stockport, Trafford, Salford, Wigan, Bolton, and Oldham, as well as other parts of the wider North West:

Figure 5 North West top clusters within a local authority by cluster index



Source: CBI Economics modelling (2023)

The report specifically comments that “Greater Manchester hosts one of the biggest clusters of Net Zero activity in the UK in scale terms, exhibiting particular strong total, businesses, jobs and economic output. The city plays an important role in Net Zero NW, an industry-led cluster that coordinates decarbonisation projects across the region and its two main cities, intensifying investment and leveraging local strengths in manufacturing and chemical production. Greater Manchester also contributes to the HyNet NW cluster which is aiming to support 6,000 jobs and £17 billion of output throughout the region by 2035, via the hydrogen economy”.

In addition, “The formation and success of this cluster is supported by extensive access to both skilled labour and finance. Strong educational institutions like the University of Manchester are delivering cutting edge research in biotechnology and sustainable fuels to support this cluster, along with a healthy pipeline of STEM talent”.

Research and Innovation Assets

GM hosts renowned universities contributing significantly to GM’s Low Carbon ecosystem through specialist R&D capability, equipment, and work with businesses.

University of Manchester

The University of Manchester (UoM) is a major driver of research, innovation, and commercialisation in the Low Carbon sector, supported by a diverse array of world-class research centres, assets, and institutes, including:

- **Energy & Electrification:** High Voltage Lab; Dalton Nuclear Institute; Dalton Cumbrian Facility; UoM at Harwell; Henry Royce Institute
- **AMAM:** National Graphene Institute; Graphene Engineering Innovation Centre; Sustainable Materials Innovation Hub; Industrial Hub for Sustainable Engineering
- **Climate, Environment & Sustainability:** Tyndall Centre; Manchester Environmental Research Institute; Sustainable Consumption Institute; Manchester Urban Institute; Firs Environmental Research Station
- **Innovation & Future Technologies:** Photon Science Institute; Manchester Hydrodynamic Lab; Aerodynamics Lab; Centre for Robotics and AI; Manchester Institute of Biotechnology; Unit M; Masood Entrepreneurship Centre

In terms of specific programmes, over 200 energy-related projects have been funded since June 2020, covering all aspects of the net-zero transition, including just transitions, infrastructure, governance, fuels, storage, demand, and remediation. The Faculty of Science & Engineering has research on hydrogen, nuclear, electricity & power, grid infrastructure & resilience, carbon capture, bioenergy, low energy computing, renewables, industrial decarbonisation, and transport, whilst the Faculty of Humanities has research on just transitions, energy poverty, cities, and energy & infrastructure planning & resilience. In terms of research, the most heavily supported areas include nuclear, hydrogen, sub-surface and negative emissions technologies, electricity and power systems, and just transitions. UoM are also involved in UK Power Networks 'Constellation' project, which is aimed at transforming traditional electricity substations into smart, adaptive hubs.

Stakeholder engagement shows UoM's comparative strengths to be in nuclear, sub-surface applications of low-carbon heating, computer science (e.g., advanced neuromorphic computing, AI and machine learning (which links to low-energy computing)), technical modelling, resilience of systems and networks (plus climate mitigation and adaptation), and offshore wind and wave renewables. Potential future areas of focus include a growing interest in disused fossil fuel infrastructure and coal mines (using warm water for geothermal), low energy computing, and a growing interest in the medical faculty between health and energy (e.g., active travel, low-carbon transport, and the condition of people's homes).

Manchester Metropolitan University

Manchester Metropolitan University (MMU) is a key contributor to the Low Carbon sector, supported by specialised research centres such as:

- **Clean Energy & Hydrogen:** Manchester Fuel Cell Innovation Centre; Greater Manchester Electrochemical Hydrogen Cluster; Regional Hydrogen Skills Framework (w/ Hydrogen Safe)
- **Circular Economy & Sustainable Materials:** Manchester Fashion Institute; PrintCity; Place-based Circular Society
- **Environment & Climate Research:** Ecology and Environment Research Centre
- **Digital & Business Innovation for Sustainability:** School of Digital Arts; Centre for Digital Innovation; Centre for Enterprise; The Innovation Retreat

MMU is also a regional leader in Carbon Literacy, creating toolkits and delivering courses for universities, colleges, and FE leadership, as well as having a regional network of Climate Ambassadors. MMU also have a number of Low Carbon-related courses for students, including MScs in Environmental Sustainability, Advanced Materials, Sustainable Finance, and Management & Sustainability, and MEngs in Electrical & Electronic Engineering, and Mechanical Engineering, plus a Corporate Responsibility and Sustainability Practitioner Apprenticeship, and a new Sustainability Management unit as part of its Business Management degree (which includes placements to support sustainability practices and innovations).

MMU's comparative strengths in the Low Carbon sector are in hydrogen and business engagement, with potential future areas of focus including business model innovation, and growing and combining strengths around hydrogen, supporting a pipeline of innovators to build the local supply chain.

The University of Salford

The University of Salford (UoS) is a leader in Low Carbon research and innovation – as well as robotics - with a range of specialised facilities and research centres, including:

- **Sustainable Energy & Smart Technology:** Energy House Labs; Smart Meter Laboratory; Centre for Domestic Energy Flexibility; North of England Robotics Innovation Centre (NERIC)
- **Built Environment & Urban Sustainability:** Centre for Processes, Resilient Infrastructure and Sustainable (Built) Environment (UPRISE); Environmental Research & Innovation Centre (ERIC)
- **Sustainable Innovation & Business:** Centre for Sustainable Innovation; Salford Innovation Forum; Sustainable Futures; Know Sustainability
- **Acoustics & Environmental Research:** Acoustics Research Centre

UoS are also involved in several significant projects in the Low Carbon sector, including:

- **Future Homes:** a £3.1m UKRI-funded project that collaborates with leading housebuilders and construction solution providers to develop and test innovative, energy-efficient housing solutions, utilising Energy House Labs
- **Heat Pump Ready:** commissioned by DESNZ as part of the Net Zero Innovation Portfolio to accelerate the development and deployment heat pump technology. UoS received £727k for a collaborative project with Nusku Ltd to develop an innovative heat pump solution

UoS's comparative strengths are in the decarbonisation of buildings, with potential future areas of focus including the establishment of a National Retrofit Centre, electrical vehicle charge point infrastructure, and decarbonisation of micro-breweries.

The University of Greater Manchester

The University of Greater Manchester (UoGM) also has several leading research assets and specialisms related to the Low Carbon sector, including the National Centre for Motorsports Engineering (NCME), Centre for Advanced Manufacturing, and Greater Manchester Business School.

UoGM's comparative strengths are in their ability to respond to the needs of businesses (and in particular SMEs), with potential future areas of focus including the recycling of EV batteries, and designing a future degree on renewable engineering, targeted at the renewable energy generation industry (e.g., offshore wind).

Catapults

The Energy Systems Catapult (ESC) plays a crucial role in the Low Carbon sector, having the mission to accelerate the net-zero energy innovation. This is based around five strategic pillars: (i) support UK companies to be global leaders in energy innovation; (ii) make it easy and desirable for people to decarbonise their homes; (iii) businesses and the public sector have tools to quickly and easily decarbonise energy used in buildings and sites; (iv) every local area in the UK is investing in new, NZ-energy infrastructure based on robust whole-system plans; and (v) a new, flexible, digitalised NZ energy system is rapidly rolled out, being more resilient and better for all consumers.

The ESC has produced several strategies around these goals, including 'Innovating to Net Zero 2024', 'Rethinking Electricity Markets: EMR 2.0' and 'Skills for an Integrated and Customer Focused Retrofit Process', with key tools and programmes including its Energy Launchpad Platform, Place Platform, and

Warm Home Prescription. It also provides support through Local Net Zero Hubs on engaging with the Government's Regional Energy Strategic Plans (RESPs).

ESC also offers a range of test and demonstration environments for innovators in the sector, including simulation tools insights from their consumer research panel, and real-world trials in their Living Lab. The ESC is also mapping UK Energy Landscapes to allow businesses to come together and identify opportunities for partnership working, strengthen supply chains, and promote the UK's capability across a range of emerging sectors, providing clear visibility of UK businesses innovating in a range of Low Carbon sectors, and the types of innovations that are coming to market.

The Connected Places Catapult (CPC) also plays a role in the Low Carbon sector, such as through its HGV & Infrastructure Demonstration programmes, Hydrogen Innovation Initiative, Net Zero Places Innovation Network, and 3Ci (Cities Commission for Climate Investment).

[Sister¹¹](#)

Sister, adjacent to UoM and MMU in the city centre is being designed to expand the cluster of R&D facilities that can link with translational research and business facilities in Atom Valley. Set over 4m sq ft, Sister will be one of the world's leading applied innovation districts. A Joint Venture between UoM and Bruntwood SciTech it will provide resilient, sustainable growth for the area, creating over 10,000 jobs and delivering over 2m sq ft of office and innovation space to house spinouts, start-ups, scaling SMEs and global businesses new to the region. Alongside this, over 1,500 new homes, retail and leisure spaces, a civic square and a variety of nature-led public spaces will be developed.

A 15-to-20-year project, Sister will be delivered in phases, with the first building, the Renold Building, being reactivated in 2024. Renold will become an innovation hub, hosting the next wave of science and technology innovators, and providing a range of coworking, office and meeting facilities to accommodate and support collaboration between researchers, entrepreneurs, businesses, and partner organisations. £15m has been allocated to the Sister Joint Venture to accelerate the redevelopment of the site as part of the GM Industrial Strategy Zone Programme, and £5m to the University of Manchester to support early-stage deep tech companies to grow and accelerate towards manufacturing scale-up. Run by Unit M.

Sustainable Ventures – a leading climate-tech accelerator and investment firm – moved into the Renold Building in November 2024, who through their co-working and event spaces provide a significant asset for GM's low-carbon sector.

[Atom Valley¹²](#)

Atom valley is a vision to create a vast manufacturing and machinery innovation mega-cluster, covering sites across Bury, Oldham and Rochdale, with three key development locations (Northen Gateway, Stakehill and Kingsway), closely tied both to central Manchester and West Yorkshire. Atom Valley has the potential to provide 20,000 new jobs and 7,000 new homes through public-private partnership and at the heart of the ambitions for the Northeast Growth Corridor Growth Location. It is a designated Mayoral Development Zone – one of the first of its kind in the UK - uniting local stakeholders to unlock funding and drive forward progress. A vast innovation cluster, covering 17m sq ft of flexible employment space primed for development, its size and scale makes it the ideal base for bold, ambitious and globally minded businesses. Sustainability is built into its design, with thousands

¹¹ [Sister](#)

¹² [Atom valley](#)

of zero-carbon homes to be delivered and the Sustainable Materials and Manufacturing Centre (SMMC) to be built at Kingsway Business Park by 2026/27.

Innovation Accelerator Programmes

Aligned with the UK Innovation Strategy, the GM Innovation Accelerator Pilot aims to capitalize on identified strengths within the seven key technology families. Three priority areas have been identified based on exceptional research capabilities, connecting with local business strengths, inward investment trends, and global market alignment:

- Sustainable advanced materials,
- AI, data and advanced computing,
- Diagnostics and genomics

Through asset development and comprehensive support activities, the Innovation Accelerator is advancing translational research, developing products and services, and driving the commercialization of these technologies. It is testing novel approaches and fostering new collaborations to address skills gaps, remove barriers to investment, and broaden innovation networks. Projects connected to the Low Carbon sector are:

- **Future Homes:** focuses on developing sustainable, innovative housing solutions that integrate advanced technologies and community-driven designs to address future living needs and environmental challenges in the region (lead: University of Salford).
- **Energy Accelerator for Non-Domestic Buildings:** aimed at driving energy efficiency and decarbonisation in commercial and public buildings through advanced technologies, innovative solutions, and support for low-carbon retrofitting and development (lead: Energy Innovation Agency (EIA)).
- **Greater Manchester Electrochemical Hydrogen Cluster:** dedicated to advancing hydrogen technologies and infrastructure, fostering innovation, and supporting the transition to a low-carbon economy in the region (lead: MMU).
- **AR EdTech for Hydrogen:** leveraging augmented reality technology to enhance education and training in hydrogen technologies, supporting workforce development and the transition to a hydrogen-based economy (lead: The Blair Project).
- **Centre of Expertise in Advanced Materials and Sustainability (CEAMS):** aimed at driving innovation and research in advanced materials and surface technologies to support industrial development and sustainability (lead: RDA).

Real Estate Premises and Requirements

There is already a variety of industrial and warehousing locations, ranging from major areas with strong brand recognition like Trafford Park to smaller areas that are an important source of local employment and business opportunities. However, our long-term economic success relies on continually renewing and enhancing these premises and infrastructure. The shift towards automation, digitization, and customizations necessitates a diverse portfolio of sites, from larger floorplates to smaller accommodations for startups. In summary, GM requires the following:

- Lab space for university spin outs and startups conducting R&D
- Lab & research facilities for translational research institutions
- Medium size industrial premises for scale up businesses trying to commercialise products

- Large sheds and floorplates for larger manufacturing businesses including FDI attraction

Supporting Infrastructure

High quality physical and digital infrastructure will be a fundamental enabler of growth in Greater Manchester's low carbon sector. This encompasses both the physical premises available to firms and the underlying utilities and networks that make them viable investment locations. Access to renewable energy at industrial sites, good grid connectivity, dark fibre and 5G/6G connectivity will be increasingly important in determining site attractiveness. A diverse portfolio of sites and premises is needed – both the retention and retrofit of existing premises and the provision of new ones of varying size, specification and location – to ensure flexibility for different types of green businesses.

Alongside this, several specific infrastructure considerations will be critical:

Data centres – The transition to a more digital, low-carbon economy is driving demand for data storage and processing capacity, but data centres are highly energy intensive. Their electricity use presents challenges for both net-zero targets and grid capacity. However, they also offer opportunities: the waste heat generated can be captured and reused through district heating networks, supporting the decarbonisation of local heat supply. Locating data centres in areas with strong renewable power availability, and designing them to integrate with local heat and energy systems, could make them an asset to the net-zero transition.

Grid capacity – As more renewable generation, electric vehicles, heat pumps and industrial electrification come onstream, pressure on grid capacity will intensify. Without significant investment in reinforcing and upgrading grid infrastructure, businesses in energy-intensive green sectors may face constraints to growth. Proactive engagement with network operators to expand local capacity, speed up connections, and embed smart grid solutions will therefore be essential if Greater Manchester is to remain competitive as a location for low-carbon industry and innovation.

Hydrogen infrastructure – Hydrogen is expected to play an increasingly important role in decarbonising hard-to-electrify sectors such as heavy transport, industry and potentially heating. For Greater Manchester, developing hydrogen production, storage, distribution and refuelling infrastructure will open opportunities to anchor new industries and supply chains in the region. Co-location of hydrogen production with industrial clusters, logistics hubs and transport corridors will be key, supported by investment in pipelines, refuelling stations and blending capability with existing gas networks. Early investment will help Greater Manchester position itself as a leader in this emerging part of the net-zero economy.

Geographical Distribution

Whilst GM has significant [Research and Innovation assets](#) within the region, this is largely clustered within the city centre along the Oxford Road corridor. While this cluster is a major strength, its concentration also creates potential spatial constraints for spin-out and start-up growth, particularly as demand for space intensifies. Atom Valley – a vision to create a vast innovation mega-cluster spanning Rochdale, Bury and Oldham – and Sister, which is focused on expanding the region's cluster of R&D facilities, represent key responses to this challenge. Both have secured Industrial Strategy Zone

funding and are intended to spread the benefits of research-led growth more evenly across the conurbation.

Industrial and warehousing development also play a vital role in addressing economic disparities across GM and boosting the competitiveness of the northern districts. As set out in *Places for Everyone*, planned Green Belt release for employment land is concentrated primarily in these northern areas, particularly around the key motorway corridors. This strategy is expected to deliver around two-thirds of new employment land supply in Wigan, Bolton, Bury, Rochdale, Oldham and Tameside, helping rebalance growth and create opportunities closer to communities with historically lower levels of economic activity.

Energy geography is also an important dimension of Greater Manchester's future growth. The upland areas to the north and east of the city region offer significant potential for onshore renewable energy generation, particularly wind, but also small-scale hydro and solar where viable. Harnessing this potential will not only support Greater Manchester's decarbonisation ambitions but also create opportunities for local supply chains and community energy initiatives.

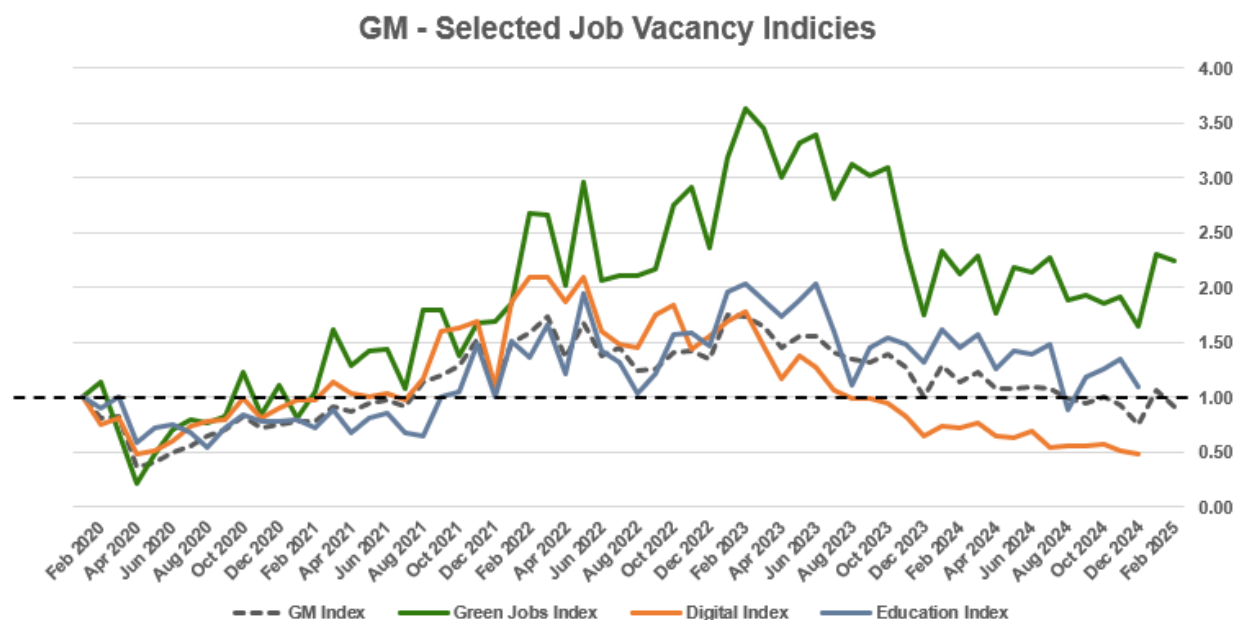
Meanwhile, the western side of Greater Manchester acts as a strategic energy gateway, with strong links to regional and national infrastructure. It is here that the region is best placed to connect into future hydrogen networks and other sources of low-carbon heat and power, particularly those emerging from the North West's wider industrial decarbonisation initiatives. Leveraging this position will be vital to ensuring that Greater Manchester can access the full range of clean energy carriers needed to underpin its transition to net-zero and to support energy-intensive industries across the conurbation.

Sector Talent Pool

The development of GM's Low Carbon sector could be inhibited by a significant skills deficit and challenges attracting talent. Skills needs for the sector are broad and could grow significantly as GM and the wider UK move towards achievement of net-zero targets – adoption of technology like Low Carbon heating and EVs is already growing rapidly, and innovation, digital skills and creativity will drive adoption and optimisation of new technology. GMCA, Growth Company and GM Chamber of Commerce research shows that 27% of employers faced shortages in Spring 2025 for filling sustainability roles, whilst 27% of job seekers cited there were too few roles available. The c.£2bn pipeline around district heat networks noted previously potentially provides a very large number of job opportunities, however there is a lag as most of these projects are not yet at construction stage.

Relatedly, MCS data show that across the three-year period January 2022 to December 2024 there were 830 Low Carbon technology installers active across GM, who between them installed c.13k items of Low Carbon technology. C.60% of the installers and c.75% of the installations related to solar PV, whilst c.25% of the installers and c.20% of the installations related to air-source heat pumps. Of these 830 installers, only 177 (c.20%) were registered in GM, who accounted for c.4.2k (c.30%) of the installations. C.50% of these installers and c.70% of these installations related to solar PV, whilst c.30% of these installers and c.25% of these installations related to air-source heat pumps.

However, employers are advertising more jobs related to the Low Carbon sector, with the number of jobs advertised increasing 2.5x faster than the overall labour market over the past five years (see chart below). Roles are fairly well spread across the region – transport roles concentrate in the city centre, but roles relating to buildings and energy are more broadly distributed. The main roles in GM from November 2024 to April 2025 were Sustainability Specialist (133), Environmental Planner (90), Safety Manager (50), Recycling / Waste Worker (38), and Civil Engineer (37).



However, perceptions of the sector are generally outdated, with many still referring to environment-linked jobs as traditional “green” career pathways rather than the technical roles that will contribute most to the net-zero transition. Various senior roles in many occupations and subsectors go unfilled, with in-demand skills including management, sales, project management, carbon literacy, construction trade skills (critical in many areas), and natural environment (incl. waste and water management). Across the Low Carbon sector, the five areas that will see the most change are:

- **Buildings:** as gas is replaced with electricity, all buildings will need retrofitting to install insulation, power generation, and low-carbon heat.
- **Transport** – both public and private transport are becoming increasingly electrified, with the shift to electric cars and electrification of rail.
- **Energy** – with increased electrification, the power network will need additional upgrades and linkage with new renewables generation.
- **Waste and Recycling** – disposal, recycling, and reuse of materials and waste in an efficient and environmental way.
- **Natural Environment** – management of nature for net zero and biodiversity objectives will be increasingly important.

Key challenges include qualification structures not being agile or flexible enough to deal with change, incentives not supporting upskilling needs (many technical occupations are already busy with full order books), and the drain of talented STEM learners (with degrees prioritised over practical and vocational learning). However, there are opportunities, such as young people being keen to go into

careers that “make a difference” (requiring a shift in perception away from stereotypical “green jobs”), the prevalence of strong digital and STEM skills in the country (for which there has been much support over recent years), a strong skills focus in wider governmental priorities (both central and local), and an increasing focus on and funding for low-carbon infrastructure, which can provide good job security if the pipeline is large and secure enough.

In addition, research commissioned by the green skills working group of the Civic Universities Board suggests an increasing overlap between digital skills and green roles, with an emergent opportunity in “Deep Green & Deep Digital” courses and career offerings, an area of academic expertise and brand recognition within the region. STEM roles are increasingly vital as the Low Carbon sector relies on data and technologically accelerated solutions to meet critical deadlines, with skills such as electrical engineering, cloud computing, cyber, AI & data management increasingly critical and sought after by learners (being viewed as Industry 4.0 careers). Digital technologies are also emerging as crucial enablers for facilitating and sustaining circular economy practice, including advanced data analytics in resource management, and blockchain enhancing supply chain transparency and traceability.

Further Education Colleges

GM is served by nine further education colleges, working to ensure students are equipped with the technical skills and real-world experience needed to excel driving the skills pipeline needed for the sector. These colleges have in recent years made several investments in cutting-edge facilities with funding provided via the Local Skills improvement Fund. These include :

- 9X “Caves” A CAVE (Cave Automatic Virtual Environment) is an immersive VR system that projects 3D images onto the walls, floor, and ceiling of a room-sized cube. It allows users to explore and interact with virtual environments in a life-sized, collaborative setting.
- 39 new teaching facilities created or enhanced across GM (e.g. workshops / classrooms refurbished / fitted out with new industry standard equipment)

GM’s colleges have also invested in several other initiatives related to the sector, including:

- **Stockport:** launched its Green Technologies Hub in February 2024, developed in collaboration with Quantum Group and Daikin UK, featuring state-of-the-art training booths that stimulate real-world installation and maintenance environments, training students in areas such as air-source heat pumps, solar PV, and EV charging installations. In October 2024 they also launched in collaboration with Green Economy, MCS, and Solar Energy UK the Solar Installer Accelerator Pilot, designed to increase the number of locally based businesses entering and benefiting from the UK’s growing solar market
- **Wigan & Leigh:** work closely with the Green Construction Advisory Panel and the Supply Chain Sustainability School, and work with LAs to support their work on heat pumps and heat networks. They have also invested over the last two years in their construction and engineering estate to support Low Carbon skills delivery, including a new Power House and Future Energies Zone facility, with two Digital Innovation Specialists having also been appointed to help embed CAVE technology. In August 202 the college was selected by DfE as one of its ten Technical Excellence Colleges for Construction across the country
- **Hopwood Hall:** have their own Green Centre containing technology in relation to heat pumps (specifically Daikin), solar panels, battery storage, wind turbines, and EV charging points. They are also developing an Engineering & Manufacturing Technician Degree for April/May 2025 and looking to embed MMC in all of their construction courses, aiming to fulfil the demand

that will come from Atom Valley and AMPI. The college are also developing materials for the CAVES around Low Carbon skills

- **Salford:** have a four-pronged sustainability strategy focused on their own campus, accommodation, green curriculum/skills, and using the green movement to harness staff motivation and coaching. The college has 650-700 construction apprentices (working with many businesses who are looking for gas engineers, plumbers, joiners etc, incl. Vital Energi around heat network engineering apprenticeships), and a number of apprentices in industrial and commercial heating and plumbing (including 170-180 in industrial pipe fitting). The college also has its own Low Carbon Centre, which includes a commercial air-source heat pump system (installed so as not to compete with other colleges' work in the domestic space/market)
- **Bolton:** well-positioned in delivering Level 2 and 3 green skills (e.g., retrofitting) and have developed a new Low Carbon Heating Technician apprenticeship with Daikin, and like Salford have a relationship with Vital Energy around heat network engineering apprenticeships

At a collective level GM's colleges are working together on the AoC Climate Action Road Map, and are working closely with the Supply Chain Sustainability School, with four colleges having worked with them in-depth and Bolton and Bury colleges specifically having put 300-400 students through their programmes and courses. Working with UoM the colleges have also obtained IUK funding to create an Innovator in Residence role for the Low Carbon sector - employed by Sustainable Ventures - to ensure that the colleges' staff have the knowledge and training required to deliver the trainings needs of companies in the Low Carbon sector.

Outside of but related to the colleges there is also:

- **Green Skills Academy:** launched by The Growth Company in January 2023 and located in Trafford Park, offers specialising training on areas such as air and ground source heat pumps, EV charging systems, wind turbine technology, solar PV installation, and smart home programming systems, involving industry partners such as Daikin and having the ability to train up to 100 learners per day
- **Manchester Innovation Activities Hub (MIAH):** a £4m facility located in Bruntwood's BASE development at Manchester Science Park established in September 2020 and operated by The Blair Project, the MIAH is dedicated to innovation and electrification skills training, aiming to accelerate the Low Carbon sector by supporting innovative SMEs in commercialising Low Carbon technologies and providing rapid upskilling of local residents
- **Kraken EnTech Hub:** a clean technology innovation and R&D facility launched in July 2024 by Kraken Technologies, part of the Octopus Energy Group. Located in Manchester's historic Pariser Building, the hub houses over 200 staff and serves as a testing ground for integrating clean tech—like EVs, heat pumps, and batteries—with Kraken's energy platform. It collaborates with global leaders including Tesla, Ford, and Mitsubishi Electric to create smarter, more efficient systems that reduce consumer energy bills

Business Support and Peer Networks

GM Growth Company¹³

The Growth Company (GC) is a key strategic partner in Greater Manchester's economic development ecosystem. Operating as a social enterprise, GC delivers a range of services that support inclusive

¹³ [The Growth Company | Economic Growth & Employment Support](#)

growth, employment, and innovation across the city-region. Its activities are closely aligned with GMCA's priorities and contribute directly to the delivery of this Sector Development Plan.

GC's business support functions are delivered primarily through the GM Business Growth Hub¹⁴, which provides tailored advice and guidance to businesses across the advanced materials and advanced manufacturing sector. This includes support for innovation adoption, workforce development, access to finance, and sustainability. The Hub's publicly funded model ensures that services are accessible to businesses of all sizes and stages, helping to unlock productivity and growth across the sector.

MIDAS¹⁵, Greater Manchester's inward investment agency, also sits within GC and plays a critical role in attracting and supporting businesses seeking to invest in the city-region. Through market intelligence, property search support, and stakeholder engagement, MIDAS helps businesses navigate the local landscape and connect with relevant networks and assets.

The Growth Company's wider priorities that will contribute to the sector plans are listed below.

1. **GM Global Promotion & Propositions:** Take the growth ambition, including Investment Pipeline, new innovation and experience assets to audiences through activation of our global networks, international missions to key markets and city to city partnerships that profile GM as a superlative place to visit, invest, study, live and do business.
2. **Upgrade our Global Investment Outcomes:** create new, and leverage existing international networks, with segmented market strategy to attract transformative high value investment in priority sectors and markets, maximising knowledge base/university linkages, workforce/employment opportunities and local business benefits.
3. **Increase impact of Business Support and simplify customer access** building on opportunities to be presented by the SME Review, devolution (also national government Business Growth Service), with more Local Authority and local partner integration. Extend provision in key theme of innovation, export and scale-ups whilst maximising use of business relationships across GC as key mechanisms for GMCA business engagement.
4. **Step Change Sector Development:** including frontier sectors, foundational and visitor economy (where they have unique leadership role via Marketing Manchester), particularly centred on strategic and research insight, market opportunities, supply side and workforce development. Leverage as a key mechanism for business engagement to maximise buy-in and support for the GM Vision.
5. **Enable Sustainable Growth, making GM the easiest place to be a net zero business.** Also grow Low Carbon sectors by transforming the climate challenge into economic opportunities, through innovation, inward investment, local business and upskilling residents.
6. **Realise Workforce Opportunities and Better Connect Residents to Good Work:** through Business Workforce Development activities create more and more inclusive opportunities including promotion of technical education pathways (T levels and apprenticeships) and increase the ability of residents to access these through upskilling and personal support (Education & Skills and Employment) assisting the key GM objective of having 80% of residents economically active.

¹⁴ [GM Business Growth Hub](#)

¹⁵ [MIDAS](#)

The Growth Company will contribute to the Low Carbon sector plan by delivering:

- **GM BGH via Green Economy:** Provides advice on energy efficiency, carbon reduction and green finance, along with sector development activities to support growth in GM's Green Technology Services Sector. This includes 1-1 business growth advice, access to training and skills, and visibility on the Green Economy market place, including increasing visibility of procurement tender/opportunity notices.
- **Energy Innovation Agency (EIA):** Accelerates the deployment of innovative energy solutions by linking local innovators with commercial opportunities and offering validation, scale-up, and project support, establishing GM as a leader in Low Carbon innovation.
- **MIDAS:** Focuses on promoting the city-regions Low Carbon credentials and attracting foreign-owned businesses in the low carbon sector, including Future Transport, Renewable Energy and Batteries.
- **Enhanced support** will be developed through plans to refresh GM's sector mapping study, updating market intelligence on supply chain strengths and weaknesses to help prioritise and drive GC's activities in low carbon sector development (inc. business support and FDI). Additional effort will be placed on delivering new accelerator programmes to address skills and business supply gaps and maximising local supply chain benefits of GM's low carbon investments.

The GMCA also undertakes and commissions further projects and initiatives that support businesses in the Low Carbon sector, whilst also helping drive growth and innovation through stimulating demand for Low Carbon goods and services. Key projects and initiatives include the Net Zero Accelerator, Go Neutral Smart Energy, Powering Our Schools (solar), retrofit programmes delivered under the Integrated Settlement, and MOUs with Octopus, Daikin, Panasonic, and SSE.

The private sector in GM also provides a range of business support and peer network offerings, including:

- **Sustainable Ventures:** Europe's largest climate tech hub, dedicated to developing and supporting early-stage climate technology businesses. They have received equity funding from both the GMCA and Barclays, and in November moved into the Renold Building as part of Sister. They've recently set up seed funding pots for start-ups (to complement the support they provide them), and are also leading the Hydrogen Innovation Challenge with the Centre for Process Innovation, a government-backed initiative aimed at accelerating the adoption of hydrogen technologies in the North-West
- **NatWest:** a BNZ board member and the largest bank for businesses in GM, NatWest's Accelerator Programme is a free initiative designed to help entrepreneurs scale their businesses, including those focused on Low Carbon solutions. The programme offers coaching, networking opportunities, and access to thought leadership events. Notably at least 25% of the spaces in their UK-wide accelerator hubs are dedicated to climate-focused businesses, providing mentoring, a dedicated climate cohort community, climate-specific events, and office space
- **Barclays:** another national bank with a large GM footprint, Barclays are participating in the UK Business Hub Small Business census, and chairing the Government-backed Willow Review with Small Business Britain, which aims to uncover the financial benefits of sustainability practices and encourage their adoption. They aim to position GM as a leader in this space, and are looking to convene clients and investors for their UK Sustainable Finance events
- **KPMG Acceleris:** headquartered in Manchester, KPMG Acceleris is a division of KPMG that specialises in helping high-growth businesses, particularly those in technology and innovation,

secure funding and accelerate growth, providing services such as funding strategy, investor connections, and scaling advice to help businesses achieve their goals

- **Praetura Ventures:** managers of one of the GMCA's Life Sciences Funds, Praetura Ventures were founded in 2011 and are based in Manchester, specialising in providing early-stage funding to high-growth businesses, particularly those located in the North of England. They aim to address the funding gap for startups outside traditional investment hubs like London, offering not only capital but strategic support to its portfolio companies
- **CBRE:** a global commercial real estate services and investment firm who operate the Evergreen and Low Carbon funds for the GMCA, focused on commercial retrofit and EGS.
- **The Carbon Literacy Project:** established in Manchester in 2011 to provide individuals and organisations with the knowledge and motivation to reduce their carbon footprint through an accredited training course. As per the 5YEP, there is a target for 15% of GM residents to have received Carbon Literacy training by 2030, with the Carbon Literacy Project already having a global reach and penetration across GM (e.g., 50% of staff at Manchester City Council)

The above is further supported by a very strong and embedded professional services sector in GM, helping GM businesses both embed sustainability and develop and innovate their operations.

Intellectual Property

Intellectual property (IP) is a critical enabler of innovation-led growth across Greater Manchester's frontier sectors, where businesses are often IP-rich but may not be able to fully realise the commercial value of their intangible assets. SMEs in these sectors may lack the knowledge and understanding to fully realise the benefits of IP protection, which can act as a barrier to scaling and investment.

Greater Manchester benefits from a strong local offer through the Business & Intellectual Property Centre (BIPC) Greater Manchester,¹⁶ part of a national network supported by the British Library and the Intellectual Property Office (IPO)¹⁷. The BIPC provides free access to expert guidance, market intelligence, and IP databases across a network of libraries, including Manchester Central Library and key locations in Bury, Stockport, and Tameside. This offer is complemented by regular workshops and events, often delivered in partnership with the IPO, to build IP literacy and support businesses to protect and exploit their innovations. The region also benefits from a strong partnership between the GM Business Growth Hub and the IPO with both organisations working together to ensure that SMEs within the region receive IP support and guidance at the right time in their journey in order that they can make informed decisions in respect of their IP assets.

International Trade

Green Economy's 2022 report shows that globally about 5% of Low Carbon Environmental Goods & Services (LCEGS) sales were exported to or imported by another country in 2019/20, with the UK accounting for 5% of global LCEGS exports and 3% of imports. The EU (which included the UK in 2019/20) was responsible for c.33% of all global LCEGS exports but only 23% of imports, with the UK accounting for c.14% of EU global LCEGS exports and 15% of imports.

GM LCEGS exports were £1,050m in 2019/20, whilst imports were £791m, with GM's contribution to the North West's exports having risen from 43% to 46% since 2015/16. Of GM's £1,050m exports,

¹⁶ [Business & Intellectual Property Centre \(BIPC\) Greater Manchester](#),

¹⁷ [Intellectual Property Office \(IPO\)](#)

c.56% were from the Renewable Energy sub-sector, c.25% from the Environmental sub-sector, and c.19% from the Low Carbon sub-sector, with the top exporting sub-sector being wind (c.£210m), which was also the top importing sub-sector (c.£120m). Second was solar PV (c.£148m of exports, and c.£36m of imports). The leading destinations for GM's LCEGS exports in 2019/20 were China (c.5%), South Korea (c.5%), Spain (c.5%), USA (c.3%), and Japan (c.2%).

Investment

According to the most recent DBT trade and investment data for 2022-2023, more than 3,800 jobs were created and 76 projects closed in GM as it continues to be a first-choice destination for investment. Key Low Carbon projects and investments in GM in 2024 included:

- **Aira's Clean Energy Hub:** the Swedish clean energy-tech company established a new hub in Trafford – their first in the UK - aiming to create hundreds of highly skilled jobs and contribute to their goal of hiring 8,000 clean energy experts across the UK
- **Kao Data Centre:** it was announced that construction has started on a £350m AI and advanced computing data centre in Stockport, with the data centre set to become the largest facility in the North of England. It will be powered by 100% certified renewable energy, with every unit of energy matched to a specific renewable asset in the UK
- **Bosch Partnership for Sustainable Fuel Expertise:** MMU announced it will work with Bosch through its Fuel Cell Innovation Centre to help SMEs and industries explore electrochemical hydrogen technologies

SWOT Analysis

This section identifies the key Strengths, Weaknesses, Opportunities and Threats for the Low Carbon sector in GM, which is particularly informed by a workshop held with several businesses from across GM's key Low Carbon sub-sectors:

Strengths

- Large and dense population – provides a reliable and concentrated source of energy and heat demand, creating the scale necessary to underpin investment and innovation
- Strong commitments and leadership – clear and consistent commitment to 2038 target, consistent messaging and strong alignment among the ten LAs pushing towards shared goals
- Collaboration and partnerships – high levels of collaboration between stakeholders, fostering a strong public-private partnership ecosystem and a culture of partnership across the region
- Planning and coordination – the 5YEP and the GMCA's spatial strategies and pipelines provide detailed and actionable goals, with the GMCA acting as a strong central convening body, facilitating leadership and cross-sector collaboration
- Research and innovation – world-class research institutions including specialised expertise, leading in projects such as district heating, building performance, and energy storage
- Infrastructure and resources – extensive public transport and EV charging networks with element of local control, strong infrastructure for waste management and local control, and significant activity in retrofit and renewable energy generation projects driving demand
- Established industry strengths – well-established professional services and consultancy sectors, and strong building technology and engineering sub-sectors

- Regional attributes – well-connected transport network, welcoming environment for innovation and pilot projects, encouraging businesses to scale and learn
- Commitment to nature and sustainability – high levels of funding and initiatives for environmental sustainability (e.g., tree planting and nature restoration)

Weaknesses

- Geographical limitations – GM's dense urban form and geographical constraints limit the availability of land for large-scale solar farms and reduce the region's overall potential for onshore wind and solar generation (although there is still potential)
- Sectoral and supply chain gaps – limited presence in key sub-sectors like nuclear, wind, and tidal, undeveloped supply chains and insufficient installers for retrofit and renewable energy, lack of energy-intensive businesses to drive demand for low carbon technologies
- Workforce challenges – significant gaps in both specialist green skills (e.g., heat pumps) and traditional trades (e.g., carpentry), ageing workforce in key sectors (e.g., heating), challenges in attracting younger talent, poor-quality private training, reduced talent pipeline since Brexit
- Funding and investment challenges – funding gaps for infrastructure, renewable energy projects, and investment in low carbon businesses, slow progress on attracting investment for large-scale projects and markets (falling behind international peers), difficulty assessing funding for future innovation projects
- Building stock and retrofit limitations – lack of regularity clarity and certainty for businesses, fragmented policies across GM (e.g., heating systems), limitations on GMCA's scope to drive policy uniformly across sectors and LAs
- Data and awareness deficits – insufficient data on low carbon business base, emissions, recycling, and commercial property ownership, weak public engagement and socioeconomic divides on accessing low carbon initiatives, messages not reaching the public effectively
- Engagement and collaboration shortcomings – varying levels of collaboration and relationships across LAs, SMEs disconnected from universities and innovation networks, inconsistent engagement with universities (not seen as relatable partners by many businesses)
- Innovation and implementation gaps – gap between early-stage technical readiness and scaling up of innovations, insufficient progress in industrial decarbonisation and large-scale infrastructure innovation, limited inclusion of critical considerations like cooling and ventilation in regional strategies
- Accessibility barriers – difficulty for residents to access the best energy tariffs and retrofit support, closed installer networks limiting the impact of retrofit programmes

Opportunities

- Public-private collaboration – GM's strong track record of public-private collaboration in non-green sectors provides a foundation to mobilise partnerships, attract investment, and accelerate delivery in the low carbon sector
- Industry development and aggregation – scaling up and aggregating public sector projects to develop building technologies sub-sector in collaboration with industry, expanding the low carbon consultancy sub-sector through networking, knowledge sharing, and leveraging demand from public and private projects

- Circular economy and waste management – create a market through collaboration between public projects, universities and local businesses, capitalising on upcoming legislation to drive practices and innovation
- Energy transition and renewables – scale up local and community renewable energy projects in partnership with GB Energy, advancing onshore wind with liberalisation of regulations, expanding heat networks following zoning legislation, focus on energy storage solutions building on existing successful projects
- Sustainable construction and retrofit – drive large-scale retrofit projects to create critical demand and build expertise, promoting sustainable construction practices (leveraging MCCA’s work), demonstrating and creating demand for building performance and monitoring tech
- Low carbon infrastructure and transportation – build markets through electrification of local transport and expand active travel infrastructure, harnessing government changes in policy
- Collaboration and knowledge sharing – increase collaboration between GM’s universities, colleges and businesses to develop innovation pipelines, strengthening ties between universities and SMEs to make research and innovation more accessible, encouraging collaboration across supply chains to understand and implement best practices and innovations
- Green finance and investment ecosystem – build a robust ecosystem to support businesses and infrastructure development, providing commitment and certainty to industry to attract investment and improve work quality across the value chain
- Skills development and reskilling – training and reskilling residents, particularly those in lower-income groups, to fill gaps in green skills and trade, strengthening local skills pipelines through targeted education and partnership with universities and colleges
- Public engagement and education – expand community engagement to counteract negativity, myths and fear of change, emphasise short-term benefits alongside long-term goals, build on Carbon Literacy campaign, engage landlords to reduce barriers for businesses
- Export potential and first-mover advantages – leverage GM’s potential to become a hub for green activity, exporting systems, processes and innovations, capitalising on geopolitical shifts to position the UK and GM as attractive markets for renewable energy companies
- Tourism and urban greening – link to the Sustainable Tourism Action Plan to create a green tourism sector, grow trees locally in nurseries to reduce emissions and create jobs
- Innovation and advocacy – use events to attract investors and publicise GM’s initiatives, develop relatable, high-impact success stories to drive public and business buy-in for green initiatives
- Data and policy advancements – leverage data on waste generation to reduce emissions from consumption and waste management sectors

Threats

- Policy and regulatory uncertainty – shifts in national or international policy, regulatory changes, or delays in devolving powers could undermine confidence and stall local progress
- Economic and market volatility – global energy price fluctuations, inflation, interest rate rises, and cyclical downturns could reduce affordability, deter investment, and shift business priorities away from sustainability

- Technological and supply chain disruptions – dependence on global supply chains for critical inputs (e.g. rare earths, semiconductors) and rapid shifts in low-carbon technologies could expose the region to shortages, rising costs, or technological obsolescence
- Workforce and skills shortages – a failure to attract or retrain sufficient skilled workers, alongside an ageing workforce in key sectors, could slow the pace of green transition and reduce competitiveness
- Public resistance and socio-political backlash – misinformation, organised resistance, or perceptions of unfair distribution of costs and benefits could create political pressure and delay adoption of net-zero measures
- Competition for land and resources – conflicts between renewable energy, housing, agriculture, and ecological uses of land could constrain deployment of green infrastructure
- Geopolitical instability – global conflicts, energy security risks, or protectionist measures could disrupt supply chains, raise energy costs, and increase dependence on external actors
- Funding and investment risks – declining public investment or changing investor sentiment could reduce capital flows into low-carbon projects, leaving Greater Manchester lagging behind competitor regions
- Credibility and target risks – failure to meet ambitious carbon-reduction targets or demonstrate tangible progress could erode stakeholder confidence, damage reputation, and weaken political momentum
- Cultural inertia and business resistance – a slow pace of cultural and behavioural change, both within businesses and among consumers, could delay uptake of new technologies and practices
- Industrial and sectoral displacement – Risk that decarbonisation policies inadvertently lead to job or economic losses in certain sectors if industrial activity relocates elsewhere
- Reputation and competitive pressures – Other regions moving faster could undermine GM's first-mover advantage, with reputational damage if GM is seen to fall behind peers in the UK or internationally

Ambitions for growth

The vision for the sector in GM:

The vision is for GM to be a national and global leader in Low Carbon innovation and expertise, recognized for cutting-edge Low Carbon solutions, world-class research capabilities, and strong international partnerships. This will drive the transformation of industries, build resilient local supply chains, and support the development of a highly skilled, diverse, and inclusive workforce. Through sustainable infrastructure investments and strategic use of public procurement, Greater Manchester will create a thriving market for Low Carbon goods and services, attracting investment and fostering innovation. A supportive policy and financial environment will underpin this growth, ensuring the region achieves its environmental targets and delivers sustainable, long-term economic prosperity, creating secure, high-quality jobs for all communities in a resilient and inclusive Low Carbon economy.

Strategic priorities:

1 – Drive Low Carbon innovation and technological leadership

Position GM as a national and global hub for Low Carbon innovation, research, and technology development, attracting FDI and building international trade partnerships to secure the capital, technology, and expertise needed to accelerate innovation and enhance global competitiveness

2 – Transform industries and build sustainable local supply chains

Accelerate the decarbonisation and transformation of GM's industries by developing sustainable local supply chains and supporting businesses to diversify into the Low Carbon sector, enhancing economic resilience and creating new opportunities for local businesses

3 – Build a highly skilled, diverse, and inclusive Low Carbon workforce

Align education, training, and workforce development programmes with industry needs, creating clear pathways into green careers and supporting lifelong learning, promoting diversity and inclusion and ensuring that the benefits of the net-zero transition are shared across all communities

4 – Develop resilient, sustainable infrastructure and unlock market opportunities through public procurement

Build a robust, future-proofed infrastructure that supports GM's net-zero ambitions whilst leveraging public procurement to stimulate local demand for Low Carbon goods and services, creating consistent market demand, attracting investment, and driving innovation in local enterprises

5 – Foster policy and regulatory alignment, finance, and investment for long-term Low Carbon growth

Create a supportive policy and regulatory environment that fosters growth and productivity in GM's Low Carbon sector, underpinned by a robust financial framework to secure long-term investment, reducing regulatory barriers and ensuring businesses have the stability and certainty needed to plan and grow, exploring innovative financing models to attract investment, scale-up successful projects, and support the commercialisation of new Low Carbon solutions

What we need to do to achieve growth

Our Approach to Delivery

The current GM Sector Support picture has developed over years, shaped by short-lived strategies, rapidly changing senior ministers, and short-term funding from various sources, often competitive and driven by the output-based approach of EU funding programmes. Sector leadership bodies like [GAMMA](#) or Health Innovation Manchester¹⁸, and business support schemes like [Made Smarter](#), have developed in no small part due to GM's efforts to influence National policy, and often budgeted for in response to funding being provided on a year-to-year basis.

The development of examples such as Places for Everyone¹⁹, the GM Good Employment Charter²⁰, GM Innovation Plan²¹, Innovation Accelerator Pilot Programme, Further Education Innovation Programme²², and the UKSPF Funded Innovation Ecosystem Navigation Service²³ show that, despite short-term strategic and funding limitations, a place-led approach to shaping interventions for our frontier sectors can deliver better outcomes.

With the new government taking a new approach to National Industrial Strategy²⁴ and local growth plans and suggesting longer-term funding settlements will now be the norm, and the powers and funding control coming to the city region, we are now able to review what is in place and begin to plan and deliver on a longer-term basis.

We will ensure that different parts of the ecosystem work together and that various interventions complement and support one another. To unlock new employment spaces for growth, we must ensure the availability of necessary skills, transport to get people there, leadership to communicate the vision and attract interest, and business support to help businesses locate and thrive. These components complement each other, and we will work to break down silos and take a strategic approach to implementing, prioritizing, and sequencing interventions to create the most impact for the sector. Our approach will build on existing capacity, create new interventions as needed, learn from successful examples elsewhere, and innovate where necessary in GM.

This section below outlines how Greater Manchester is and will continue to support the sector with the resources and leavers at our disposal, including via collaboration with delivery partners, government and industry. Whilst some of the actions outlined in this plan are currently funded, or already in delivery, others represent early-stage exploration or proposition development intended to lay the groundwork for future investment.

How our Action Plan Is Structured: Levers for Growth

Realising our vision and strategic priorities requires a coherent, interconnected action plan based on collaboration and co-design with the sector, avoiding siloes. To ensure uniformity of approach across

¹⁸ [Health Innovation Manchester](#)

¹⁹ [GMCA, Places for Everyone \(2024\)](#)

²⁰ [GM Good Employment Charter](#)

²¹ [GM Innovation Plan](#)

²² [Further Education Innovation Programme](#)

²³ [UKSPF Funded Innovation Ecosystem Navigation Service](#)

²⁴ [UKGOV, The UK's Modern Industrial Strategy](#)

all five Sector Development Plans, enabling the opportunities for cross cutting interventions and sharing of knowledge to be maximised, we will develop our approach under 5 key “Levers of Growth”.

Sector Leadership

Establishing strong leadership in Greater Manchester’s Low Carbon sector is crucial to achieving the above vision and strategic objectives. While several groups - such as the Green City Region Partnership - already bring together stakeholders across the region, their focus is primarily on delivering Greater Manchester’s environmental commitments rather than maximizing the economic opportunities presented by the net-zero transition (although that is a focus of the Greater Manchester Five-Year Environment Plan 2025-2030).

To fully unlock the potential of Greater Manchester’s Low Carbon economy, a more coordinated leadership structure is needed—one that integrates political, business, and academic stakeholders to create a unified strategy for growth. This structure will focus on positioning Greater Manchester as a national and global leader in Low Carbon innovation, driving forward the transformation of industries, supporting local supply chain development, and aligning workforce and infrastructure strategies with industry needs. With strong, proactive leadership, Greater Manchester can attract FDI, build global trade partnerships, and create a dynamic Low Carbon ecosystem that fosters sustainable business growth, high-quality job creation, and long-term economic resilience.

This collaborative leadership approach will ensure that Greater Manchester’s Low Carbon sector is not only recognized for its research and innovation excellence but also for its ability to scale up and commercialize world-class solutions, delivering on both environmental and economic ambitions for the region.

Development Planning and Infrastructure

Strategic planning and investment in sustainable infrastructure are essential for driving the growth of Greater Manchester’s Low Carbon sector. Two dimensions are particularly important.

First, decarbonisation itself will generate sustained local demand. As Greater Manchester invests in the transition to net-zero, the rollout of low-carbon solutions such as extensive heat networks, building retrofit, rooftop solar, EV charging, and electrified transport will create strong and consistent markets for products, installation, maintenance and associated professional services. This demand will provide opportunities for local businesses and supply chains to expand, innovate and scale, while also ensuring residents and communities benefit directly from the transition.

Second, the city-region needs to create the right places for low-carbon businesses to locate and grow. Through the *Places for Everyone* strategy and targeted Growth Locations, Greater Manchester can ensure a pipeline of development sites that prioritise sustainability and resilience. Strategic employment zones, low-carbon business parks and renewable energy clusters will be critical to attracting investment, supporting start-ups and spin-outs, and fostering collaboration across sectors. By aligning planning policies and land use strategies with net-zero ambitions, GM can develop the physical and digital foundations – from green transport links to renewable energy integration and advanced digital connectivity – that businesses need to thrive.

Public procurement will play a vital role across both of these dimensions: accelerating the decarbonisation of the city-region by stimulating demand for low-carbon solutions, while also anchoring investment into new sites and facilities that provide long-term certainty for businesses. Together, these approaches will support the growth of local supply chains, create high-quality jobs, and position Greater Manchester as a global leader in sustainable urban and industrial development.

Innovation and Research

Investment in innovation and research is essential to Greater Manchester's ambition of becoming a global leader in Low Carbon technologies and solutions. R&D plays a pivotal role in driving the development and commercialization of the technologies needed to achieve Greater Manchester's net-zero goals, enhance productivity, and strengthen the region's competitive advantage in global markets. Strategic focus on innovation will enable Greater Manchester to attract FDI, promote exports, and build strong international trade partnerships, cementing its position as a hub for low-carbon excellence.

Innovation is particularly important in the Low Carbon sector because many of the technologies and business models required to decarbonise are still immature, and in many cases remain more expensive than their high-carbon counterfactuals (e.g., air-source heat pumps vs. gas boilers). Creating the conditions for demonstration and field-testing within Greater Manchester is therefore critical — both to de-risk these solutions and to accelerate cost reduction and adoption at scale. By positioning itself as a “testbed city-region,” Greater Manchester can attract cutting-edge innovators and ensure that breakthroughs are deployed in real-world contexts that benefit local communities.

The Greater Manchester Innovation Plan (2022) lays the groundwork for developing a dynamic innovation ecosystem by leveraging the strengths of its universities, research institutions, and industry partners. This cluster-led approach will foster collaboration, build translational capacity, and create a pipeline of breakthrough technologies and solutions that can be scaled for commercial success. By building strong networks and partnerships, Greater Manchester will not only support the growth of local enterprises but also stimulate international collaborations that open new markets and drive further investment.

Central to this strategy is the need to strengthen linkages between academic research, industrial capabilities, and public sector partners, creating a thriving innovation pipeline that accelerates the deployment of clean technologies. This includes expanding research in key areas such as renewable energy, sustainable mobility, and digital technologies, as well as supporting the transition of traditional industries to adopt low-carbon practices.

Through a coordinated and forward-looking approach to innovation and research, Greater Manchester can harness its unique strengths to address critical climate challenges, stimulate economic growth, and lead the development of cutting-edge Low Carbon solutions. This will not only generate significant economic value but also position GM as a global leader in low-carbon R&D, driving long-term sustainable growth for the region and beyond.

Enterprise and Business Support

Effective business support is essential for driving the growth, competitiveness, and resilience of Greater Manchester's Low Carbon sector. SMEs play a crucial role in developing and delivering innovative Low Carbon solutions, yet they often face barriers to scaling due to limited resources, difficulties accessing specialist advice, and challenges navigating complex support systems. To overcome these barriers, a comprehensive and tailored approach to enterprise support is needed—one that helps businesses build sustainable models, adopt low-carbon technologies, and leverage new opportunities in a rapidly evolving market.

Greater Manchester's established place-based approach to business support has demonstrated the value of targeted, locally tailored interventions through initiatives such as the Business Growth Hub. Building on this foundation, the next phase will require bespoke support mechanisms that address the unique needs of the Low Carbon sector, including support for accessing green finance, enhancing export readiness, and building circular economy business models. By strengthening partnerships across the public sector,

industry, and academia, Greater Manchester can create a cohesive support network that enables low-carbon businesses to innovate, diversify, and compete on a global stage.

An integrated enterprise support system will also focus on attracting FDI and promoting trade to position Greater Manchester's Low Carbon enterprises within global value chains, ensuring they can access international markets and secure the investment needed to scale. Alongside this, public procurement can be used strategically to stimulate demand for low-carbon goods and services, creating consistent delivery pipelines and fostering market confidence.

By aligning business support with Greater Manchester's broader economic and environmental goals, Greater Manchester can unlock the growth potential of its Low Carbon sector, driving innovation, productivity, and job creation. With the right support in place, the region can become a thriving hub for low-carbon enterprises, generating new opportunities for local businesses and contributing significantly to both regional prosperity and the global net-zero transition.

Skills and Labour Supply

The availability of a skilled and adaptable workforce is a critical determinant of success for Greater Manchester's Low Carbon sector. As new technologies and business models rapidly evolve, ensuring the local workforce is equipped with the right skills to support the transition to a Low Carbon economy is essential. Addressing skills shortages is not only about filling immediate gaps but also about building a pipeline of talent capable of sustaining long-term growth and innovation. Without accessible training and reskilling opportunities, communities risk being excluded from the economic benefits of the net-zero transition, undermining efforts to promote inclusive and equitable growth.

Greater Manchester's commitment to locally driven skills planning has positioned the region well to meet the needs of its employers and residents. By securing control over the Adult Education Budget and championing place-based skills initiatives, Greater Manchester has laid the groundwork for a skills system that is responsive to the Low Carbon sector's unique needs. This foundation will be built upon by expanding training provision, creating clear career pathways, and ensuring that education programs align with industry demand—from vocational training in renewable energy and green construction to advanced digital and technical skills required for R&D and environmental management.

A key focus will be on fostering diversity and inclusion in the workforce, creating accessible entry points and career progression opportunities for all residents, and ensuring that the benefits of the low-carbon transition are shared equitably across the region. This includes developing targeted programs for underrepresented groups and communities most affected by the shift to a net-zero economy.

By working closely with businesses, educational institutions, and local communities, Greater Manchester can create a comprehensive skills and labour strategy that supports lifelong learning and career mobility. With the right support and infrastructure, Greater Manchester will not only meet the immediate and future needs of its Low Carbon sector but also position itself as a leader in developing a skilled, diverse, and inclusive workforce for the green economy.

Delivery Plan

The below plan provides a series of actions that we believe GM needs to take to support the sector going forwards.

The table below outlines how these actions are aligned to our different leavers for growth, if this activity is ongoing or new activity proposed in this plan, if this is currently funded or not, lead organisations, timeframes for this activity (short term – 25/26 FY or medium term - beyond this timeframe) as well as which of these actions are specific to this plan, and which sit across all 4 sector development plans.

Lever	Action	Lead	Kind	Strategic Priority	Timeframe	Programme	Shared Distinctive Action /
Development, Planning and Infrastructure	Ensure we are maximising opportunities to unlock key strategic sites via the UKGov's Strategic Site Accelerator, Mayoral Recyclable Growth Fund and Connections Accelerator Service.	GMCA, UKGov	New Activity	4	Medium	NIS	Strategic
Development, Planning and Infrastructure	Develop a better understanding of the Quantum of market demand for physical infrastructure, including modular lab space, scale up space, larger sites for larger businesses including via FDI as well as GPU compute, and digital connectivity infrastructure requirements.	GMCA	New Activity	4	Short		Shared
Development, Planning and Infrastructure	Ensure the Investment Plan embeds provision for digital-first infrastructure (including AI Growth Zones, dark fibre, and 5G/6G) and clean energy systems required by the sectors at key locations to ensure sustainable development.	GMCA	Ongoing Activity	4	Medium	IP	Shared
Development, Planning and Infrastructure	Launch and utilise £2m Planning & Development fund for Districts can draw from to plan and prepare for the development of strategic sites.	GMCA	Ongoing Activity	4	Short/Medium	ISZ	Shared
Development, Planning and Infrastructure	Explore interim commercial space solutions for start-ups and scale-ups guided by the Integrated Pipeline and Regional Economic Spatial Plans (RESPs). This includes identifying opportunities to accelerate delivery through the Strategic Sites Accelerator and Mayoral Recyclable Growth Fund.	GMCA & Partners	Ongoing Activity	4	Medium		Shared
Planning and Development	Support the development of cross-sector creative hubs for collaboration and innovation.	GMCA / Local Authorities	New	4	Medium		Shared
Development, Planning and Infrastructure	Create a framework to ensure the GMCA's and others' investment in low-carbon infrastructure translates into sustainable economic growth and good jobs, feeding into and leveraging e.g., the Integrated Pipeline, the Local Growth Plan, the National Infrastructure Pipeline, the Strategic Sites Accelerator, and new powers from the English Devolution & Community Empowerment Bill (e.g., MDCs, CIL)	GMCA & Growth Company	New Activity	4	Medium		Distinctive
Development, Planning and Infrastructure	Leverage and build upon pre-existing engagement with national-level stakeholders (e.g., NESO) on Regional Energy Strategic Plans (RESPs) and new grid-related policies (e.g., Connections Accelerator Service, Advanced Procurement Mechanism, Market Demand Guarantee) to maximise support and investment in GM's grid and renewables up to 2040	GMCA, ENWL & UKGov	Ongoing Activity	4	Medium		Distinctive
Development, Planning and Infrastructure	Investigate the potential to work with the Government's new £12m investment in 'digital spine' data sharing infrastructure, leveraging the GMCA's upcoming work with the Energy Systems Catapult to scope potential future energy needs and responsibilities in GM	GMCA & UKGov	New Activity	4, 2	Medium		Distinctive
Development, Planning and Infrastructure	Align with new neighbourhood governance requirements from the English Devolution & Community Empowerment Bill, working with Local Authorities to integrate community energy priorities into new neighbourhood-level structures, exploring finance needs and opportunities through the Net Zero Accelerator	GMCA, LAs & ENWL	Ongoing Activity	4	Medium		Distinctive
Development, Planning and Infrastructure	Investigate the potential feasibility / business case for Community Right to Buy legislation to also include green assets/projects	GMCA & LAs	New Activity	4	Medium		Distinctive
Development, Planning and Infrastructure	Build on GMCA commercial rooftop solar research with EST to develop fast-track commercial rooftop projects	GMCA, EST & Growth Company	Ongoing Activity	4, 3, 5	Medium		Distinctive
Development, Planning and Infrastructure	Use Transport for City Regions funding to leverage IUK and private finance for transport decarbonisation plans (incl. Sustainable Aviation Fuels), using Key Route Network powers to prioritise green transport	GMCA & TfGM	New Activity	4, 1, 3	Medium		Distinctive

Enterprise and Business Support	Work to develop a framework for higher quality output metrics for support programmes that focus on capturing progress towards commercialisation and quality of programme benefits for businesses.	GMCA	New Activity	1	Medium		Strategic
Enterprise and Business Support	Support the continued operation of Growth Company networks, and ensure we are maximising the reach of current initiatives to support businesses to access programmes and funding, such as Made Smarter Programme, innovation ecosystem navigation service and BeeNetZero programme.	GMCA & Growth Company	Ongoing Activity	2, 3	Medium		Strategic
Enterprise and Business Support	Support the GM Business Board with the implementation of the review Business Support offer in GM, to identify gaps and / or the need for specialisation of support for the sectors.	GMCA & Growth Company	Ongoing Activity	2, 3	Medium		Strategic
Enterprise and Business Support	Strengthen and tailor Greater Manchester's intellectual property (IP) support offer across all frontier sectors by working with the Business & Intellectual Property Centre (BIPC) Greater Manchester and the Intellectual Property Office (IPO), maximising our support to IP-rich SMEs most in need of support, and ensuring that IP is embedded into wider business support and innovation programmes across GM.	GMCA Intellectual Property Office	New Activity	1	Medium		Strategic
Enterprise and Business Support	Undertake a cross-sector mapping exercise to identify key international markets and trade relationships for each of Greater Manchester's frontier sectors. This will include analysis of sub-sector strengths, export potential, and alignment with global demand, and will inform the development of targeted international engagement and trade propositions.	GMCA & MIDAS	Ongoing Activity	5, 2	Medium		Strategic
Enterprise and Business Support	Support UKGovs Supply Chain Centre and Digital Supply Chain Hub with the data and collaboration activities as required.	GMCA, UKGov	New Activity	2	Medium	NIS	Strategic
Enterprise and Business Support	Ensure we are maximising opportunities for GM businesses to access funding via the British Business Bank, including the Industrial Strategy Growth Capital, Strategic Equity, IP-Backed Lending and Nations and Regions Investment programmes.	GMCA, UKGov	New Activity	5, 2	Medium	NIS	Strategic
Enterprise and Business Support	Support the role out of UKGovs cluster champions programme and their North West Deployment, and maximise opportunities presented via the innovation cluster programme.	GMCA, UKGov	New Activity	5, 2	Short	NIS	Strategic
Enterprise and Business Support	Ensure we are maximising opportunities for GM businesses to access funding via the enhanced remit of the National Wealth Fund announced as part of UKGovs National Industrial Strategy.	GMCA & Growth Company	Ongoing Activity	5, 2	Medium	NIS	Strategic
Enterprise and Business Support	Complete a review of our current business engagement forums and processes across our frontier sectors and strengthen businesses voice in the development of our strategies and plans, including further iterations of sector development plans.	GMCA & Growth Company	Ongoing Activity	2, 3	Short		Strategic
Enterprise and Business Support	Explore options for how additional business incentives (e.g. match funding) to attract businesses to the region could be structured if resources are made available.	GMCA & MIDAS	New Activity	5, 2	Medium		Shared
Enterprise and Business Support	Complete research to understand what additional public investment tools could be developed to address key investment gaps for our frontier sectors.	GMCA	New Activity	5, 2, 3	Short		Shared
Enterprise and Business Support	Explore how we can enhance resources available to proactively engage major, global innovative firms and develop sophisticated inward investment plans to attract them, including via lunching key campaigns working with MIDAS.	MIDAS GMCA	Ongoing Activity	5, 2, 3	Medium		Shared
Enterprise and Business Support	Continue to develop closer working with DBT teams in post in target markets to strengthen FDI relating to cluster focus areas.	MIDAS GMCA	Ongoing Activity	5, 2	Short		Shared
Enterprise and Business Support	Explore the introduction of a GM programme that provides an easily navigable platform for all frontier sector organisations to understand the current ecosystem of organisations and access opportunities for investment and grants, with regularly updated data, as well as options for creating "innovation" champions to support business with accessing grant support and other opportunities in the ecosystem.	GMCA	New Activity	5, 1	Medium		Shared
Enterprise and Business Support	Expand existing programmes, such as Made Smarter, into other frontier sectors and other sub-sectors within frontier sectors.	GMCA & Growth Company	Ongoing Activity	1, 2, 3	Medium		Shared
Enterprise and Business Support	Leverage recently announced support for energy-intensive industries with energy costs to ensure GM does not decarbonise by deindustrialising, building on pre-existing programmes such as BNZ Trafford Park and the LIDP project at Stakehill to engage businesses, develop new	GMCA & Growth Company	New Activity	2, 1	Medium		Distinctive

	business models (e.g., around reusing more waste heat), and make the case for more government support in these areas						
Enterprise and Business Support	Explore the potential to provide more specific business support on industrial decarbonisation (incl. in relation to regulations like CBAM) and circular economy, linking to pre-existing programmes like Made Smarter	Growth Company	New Activity	2, 1	Medium		Distinctive
Enterprise and Business Support	Investigate the need to provide additional sector-specific support (e.g., electricity networks, offshore wind, onshore wind, hydrogen & CCUS, nuclear, sustainable transport, heat networks), linking into national-level supply chain and sector development programmes where required	GMCA, Growth Company & UKGov	New Activity	2, 3, 5	Medium		Distinctive
Enterprise and Business Support	Explore the potential need to create a green trade & export wraparound support service, providing support on e.g., green export standards, UK Export Finance support, and the OFI's Concierge Service	GMCA, Growth Company & UKGov	New Activity	2, 5	Medium		Distinctive
Enterprise and Business Support	Explore the potential need to create green investment wraparound service, providing support on e.g., export finance readiness, PE/institutional investment, and scaling into global supply chains	GMCA, Growth Company & UKGov	New Activity	2, 5	Medium		Distinctive
Enterprise and Business Support	Engage central Government on their recently announced Business Growth Service (which will cover low-carbon upgrades, referrals to grants & loans, navigation tools for green procurement & compliance), along with GOV.UK's Onoe Login and AI Chatbot for Business Support, and how this will link in with GM programmes like Bee Net Zero	GMCA, Growth Company & UKGov	New Activity	2, 3, 1	Medium		Distinctive
Enterprise and Business Support	Build on BNZ's recent energy flexibility campaign with ENWL to develop further business support on energy flexibility, engaging as required with the Government's '2GW Peak Time Flexibility Challenge'	GMCA, Growth Company & ENWL	New Activity	2, 4	Short		Distinctive
Innovation and Research	Explore potential opportunities for a Joint Technology Transfer office to sit across all universities and maximise technology transfer opportunities across GM.	University Partners Innovation GM	New Activity	1	Medium		Strategic
Innovation and Research	Maximise the impact of the Extended Innovation Accelerator Pilot and centre frontier sector needs in the development of Greater Manchester's response to the Local Innovation Partnership Fund	GMCA	Ongoing Activity	2, 4, 5, 7	Short		Shared
Innovation and Research	Increase our understanding of industry and academia R&D partnerships in the city region relevant to the frontier sectors, to drive for GM to be a testbed for investment in innovation with commercial application.	GMCA & Partners	New Activity	1	Short		Shared
Innovation and Research	Explore the creation of a localised GM fund which reinvests the value from innovation into social value projects, e.g. data assets for health.	GMCA	New Activity	1, 5	Medium		Shared
Innovation and Research	Explore the creation of a seed fund for high risk/reward pilots that industry cannot absorb but tackle key socio-economic challenges including net zero.	GMCA	New Activity	1, 5	Medium		Shared
Innovation and Research	Support and input into the Science and Innovation Audit on behalf of all frontier sectors.	GMCA	Ongoing Activity	1	Short		Shared
Innovation and Research	Engage GM universities and businesses to prepare project proposals for the Local Innovation Partnerships Fund (e.g., National Retrofit Centre at UoS), linking this in with the Net Zero Accelerator's "innovation sandbox" workstream and other frontier sectors and challenges (e.g., advanced manufacturing, AI & digital)	GMCA, Growth Company & Universities	Ongoing Activity	1	Medium		Distinctive
Innovation and Research	Work with local partners (incl. businesses) to proactively engage innovation funding bodies (e.g., IUK, Ofgem) on innovation gaps and needs from the perspective of both trialling and developing innovations, giving early-stage firms the opportunity to test and prove solutions locally	GMCA, Growth Company, Universities, IUK & Ofgem	New Activity	1, 5	Medium		Distinctive
Innovation and Research	Work with bodies funded by the Innovation Accelerator and Industrial Strategy Zone that have expertise in circular economy (e.g., CEAMS, AMMIC, SMMC) to identify opportunities for trials and pilots, securing funding from national bodies (e.g., UKRI, GBE)	GMCA, IA/IZ Partners, UKRI, GBE	New Activity	2, 3, 1, 5	Medium		Distinctive
Innovation and Research	Build on pre-existing work to develop the business case for a composite recycling cluster in GM, working with DBT, UoM, the NCC, and other industry bodies & companies	GMCA, Growth Company, DBT & UoM	Ongoing Activity	2, 3, 1, 5	Medium		Distinctive

Innovation and Research	Leverage GM's housingbase and upcoming requirements within Places for Everyone for net-zero embodied carbon by 2028 to engage central government and pilot circular construction projects (incl. in Modern Methods of Construction (MMC))	GMCA, Growth Company & UoS	New Activity	2, 3, 1, 5	Medium		Distinctive
Innovation and Research	Trial innovation-linked procurement under the Commercial Innovation Hub model, using GMCA tenders to help new green products & services reach market faster	GMCA & Growth Company	Ongoing Activity	5, 2	Medium		Distinctive
Innovation and Research	Work with partners to pilot standardisation of grid equipment and services (as set out in the Clean Energy Industries Sector Plan)	GMCA & Growth Company	New Activity	1, 5, 2	Medium		Distinctive
Innovation and Research	Explore expanding Green Economy's supply chain capability research on the Net Zero Accelerator's asset class sectors (social housing retrofit, public sector retrofit, solar PV ground mount, solar PV rooftop, onshore wind, heat networks, and EVCI) into other sectors (e.g., electricity networks, sustainable transport, nuclear, hydrogen & CCUS, water management), linking in with national-level sector mapping and development initiatives where relevant (e.g., offshore wind, onshore wind, Global Supply Chains Foresight Report)	GMCA & Growth Company	New Activity	2, 3	Medium		Distinctive
Innovation and Research	Map the GM manufacturing capacity for heat pump components, potentially working with partners to submit a bid to the next round of the Heat Pump Investment Accelerator Competition (HPIAC)	GMCA, Growth Company & industrial partners (e.g., Daikin)	New Activity	2, 5	Medium		Distinctive
Innovation and Research	Audit GM's potential for commercial, community-scale, and small wind generation, working on this with the North West Net Zero Hub to feed into national site selection datasets	GMCA & NWNZH	Ongoing Activity	2, 5	Medium		Distinctive
Innovation and Research	Build on pre-existing initiatives (e.g., EIA engagement in / partnerships with the Middle East and Australia, HyTech work in Japan) to link GM firms into international R&D and standards partnerships via DBT and BSI	GMCA & Growth Company	Ongoing Activity	1, 5	Medium		Distinctive
Sector Leadership	Ensure Greater Manchester is represented on relevant national industry groups supporting the delivery of the national industrial strategy .	GMCA, UKGov	New Activity	5	Medium	NIS	Strategic
Sector Leadership	Communicate the narrative of GM's cross cutting sectoral strengths to internal and external stakeholders, including industry and government, to inform national policy & strategy for the sector and ensure they are aware of GM's strengths and opportunities, initiatives locally, and gaps in our ability to develop the sector locally.	GMCA & Partners	Ongoing Activity	5, 2, 3	Short		Shared
Sector Leadership	Develop a mechanism for ongoing review of the evidence base regarding GM's frontier sectors, sub-sector strengths, and their development needs, responding to emerging capabilities.	GMCA	New Activity	2, 3, 4	Medium		Shared
Sector Leadership	Undertake research to map the gap between where sectors are now and where they need to be to deliver the 5YEP's targets, considering what sectors are currently delivering, what they are capable of, and focused activity required to plug the biggest gaps .	GMCA & Partners	Ongoing Activity	3, 4, 2	Medium		Shared
Sector Leadership	Explore options to develop a mechanism to facilitate cross sector communication between frontier sectors and increase engagement in decision making processes .	GMCA	New Activity	5	Medium		Shared
Sector Leadership	Explore options to increase our understanding of the supply chains that both services, and our businesses in the sector service, including the businesses in GM that make up these, and what is driving key decisions around supply chain management for OEMs and key opportunities for GM.	GMCA	New Activity	2	Medium		Shared
Sector Leadership	Bring together local funding/initiatives (e.g., NZ Accelerator, Mayoral Growth Fund, Local Growth Fund) and national funding/initiatives (e.g., GB Energy, National Wealth Fund, British Business Bank, Office for Investment, UK Export Finance, Innovate UK) to engage different parts of the capital stack (incl. non-financial Tier 1 companies and retail banks) to maximise Low Carbon investment in GM	GMCA, UKGov & Industry Partners	Ongoing Activity	5	Short		Distinctive
Sector Leadership	Build on the GMCA's 'Sustainable Economic Growth Group' to coordinate efforts across GMCA directorates and The Growth Company in respect of the above and other aspects of Low Carbon sector development	GMCA & Growth Company	Ongoing Activity	5	Short		Distinctive
Sector Leadership	Make the case to GB Energy and other relevant national bodies for MSAs to be the main delivery tool/vehicle for low-carbon objectives, developing active proposals for as many GB Energy priorities as possible (e.g., onshore wind, community energy, innovation)	GMCA & GBE	Ongoing Activity	5	Short		Distinctive
Sector Leadership	Update the GM Green Investment Prospectus as part of the Net Zero Accelerator programme, setting out investible opportunities in clean power, manufacturing, housing, retrofit, transport	GMCA	Ongoing Activity	5	Short		Distinctive

	decarbonisation, and resilience that align with National Wealth Fund and British Business Bank priorities						
Sector Leadership	Build on the NZ Accelerator to create a GM Solar Investment Prospectus, using aggregated PPAs and/or CfD-style local procurement to help de-risk projects and recommend preferred finance products for different clients and demographics	GMCA & Growth Company	New Activity	5, 1	Medium		Distinctive
Sector Leadership	Explore opportunities to build co-benefits (e.g., health) into investments at an early stage, quantifying outcomes and linking them to financial performance	GMCA	New Activity	4	Medium		Distinctive
Sector Leadership	Leverage the development of embodied carbon standards within PfE to adopt ethical and sustainable supply chain standards in GMCA contracts, helping partners and GM anchor institutions to do the same, promoting GM as a leader in ethical procurement in clean energy (aligning with GB Energy's ethical supply chain mandates and Clean Industry Bonus principles)	GMCA & Growth Company	New Activity	4	Medium		Distinctive
Sector Leadership	Identify the needs and opportunities around nuclear in GM (e.g., infrastructure, skills, supply chain), potentially leading to engagement with GB Energy – Nuclear and the establishment of a GM T&F group on this	GMCA, Growth Company & UoM	New Activity	5, 2, 3, 1	Medium		Distinctive
Sector Leadership	Use GM's upcoming Hydrogen Strategy to position GM as a sector leader, with a particular focus on skills, university assets, and potential sites in Trafford	GMCA, Growth Company & MMU	Ongoing Activity	5, 2, 3, 1	Medium		Distinctive
Skills and Labour Supply	Ensure that we are aligning sector priorities with MBacc, and that young people have a clear line of sight to jobs in the sectors.	GMCA	Ongoing Activity	4	Medium		Strategic
Skills and Labour Supply	Align Skills and Employment Support interventions with Greater Manchester's Local Skills Improvement Plan (LSIP), led by the GM Chamber of Commerce and utilise new devolved powers from the Integrated Settlement and existing programmes (e.g., Adult Education Budget, Skills Bootcamps) to address priority skills gaps. Support young people and adults in developing academic and technical skills identified through sector skills analysis, informed by business needs and feedback on the Skills System.	GMCA	Ongoing Activity	3	Medium		Strategic
Skills and Labour Supply	Work to ensure that employers and learners are more aware of existing provision and access points into it. This will include a concerted effort to link employers with providers to ensure that awareness of current provision is up to date taking in established options such as Apprenticeships and 'newer' options such as T-Levels and a range of shorter course options around HTQs.	GMCA & Partners	Ongoing Activity	3	Medium		Strategic
Skills and Labour Supply	Explore opportunities for new paid internships placing university students in SMEs to provide innovation support.	GMCA & Universities	New Activity	3	Medium		Strategic
Skills and Labour Supply	Increase our understanding of specific graduate needs for frontier sectors and developing our approach to increasing retention in GM.	GMCA & Universities	Ongoing Activity	3	Medium		Strategic
Skills and Labour Supply	Foster greater collaboration between all parts of the skills systems (HE institutions, FE colleges, ITPs), facilitate shared learning by exemplar institutions on effective programmes, and join up existing assets within GM, using this as a platform to better engage industry and connect their future skills needs to available	GMCA, FE Colleges, Higher Education Institutions and Partners	Ongoing Activity	3	Medium		Strategic
Skills and Labour Supply	Work with partners to increase the impact of employer engagement in shaping the curriculum within colleges by working with existing advisory boards within colleges and facilitating events/conferences at a GM level where they add value.	GMCA & FE Colleagues	New Activity	3	Medium		Shared
Skills and Labour Supply	Review the opportunities for frontier sector relevant short courses, bootcamps etc. opened up by the new Devolution Deal on skills funding.	GMCA	New Activity	3	Short		Shared
Skills and Labour Supply	Work with the Office for Clean Energy Jobs and the North West Net Zero Hub to create better datasets on supply-demand mismatches and future occupation needs, feeding this into e.g., the National Infrastructure Pipeline and to inform future programme needs	GMCA, OCEJ & NWNZH	New Activity	3, 2	Medium		Distinctive
Skills and Labour Supply	Work with the North West Net Zero Hub on the next stage of the Regional Skills Pilot in Cheshire and potential expansion of the Skills Passport programme, using this to inform the potential creation of short, employer-backed training courses and/or academies in key growth sectors	GMCA & NWNZH	Ongoing Activity	3, 2	Medium		Distinctive

Skills and Labour Supply	Link Government plans to support an additional 65k 16-19-year-olds into IS-8 sectors (plus construction) by 2028-29 into the MBacc, building on the MBacc's 'Construction and the Green Economy' Gateway by partnering with more employers and training providers, leveraging the pre-existing Bee Network route to create sustainable transport skills programmes	GMCA, Growth Company & Industry Partners	Ongoing Activity	3	Medium		Distinctive
Skills and Labour Supply	Leverage central Government funding (e.g., £200m Skills Mission Fund, £1.7bn capital funding from 2026-27 to 2029-30) to equip GM's colleges and training centres with the facilities needed for hands-on green skills training (based on employers' highest-demand occupations)	GMCA & FE Colleges	New Activity	3	Medium		Distinctive
Skills and Labour Supply	Work with the new Technical Excellence College in construction at Wigan & Leigh College and the Government's recently announced £625m investment to train new construction workers to engage industry to create new courses in this space (incl. on waste prevention & circular economy principles)	GMCA, Growth Company & FE colleges	Ongoing Activity	3, 2	Medium		Distinctive
Skills and Labour Supply	Expand outreach to underrepresented groups and non-traditional learners, aligning with e.g., the Social Inclusion Forum, DWP's employment support reforms, and apprenticeship & foundation pathway reforms	GMCA & Growth Company	New Activity	3	Medium		Distinctive
Skills and Labour Supply	Support Green Economy with expanding their Solar Installer Accelerator programme into heat pumps and retrofit (and other sectors after that if deemed necessary)	GMCA & Growth Company	Ongoing Activity	3, 2	Short		Distinctive
Skills and Labour Supply	Prioritise skills around retrofit, heat pumps, heat networks, and solar in the next Local Skills Improvement Plan (LSIP), aligning pathways (where beneficial and feasible) to allow multi-skilled workers	GMCA	Ongoing Activity	3	Short		Distinctive
Skills and Labour Supply	Work with GB Energy to run targeted "Green Careers in GM" campaigns with sector employers and colleges to promote opportunities	GMCA & GBE	New Activity	3	Short		Distinctive
Skills and Labour Supply	Investigate the potential for ageing workforce initiatives in the sector, linking in with central Government's upcoming Ageing Workforce Strategies and the GMCA's Ageing Hub	GMCA	New Activity	3	Medium		Distinctive
Skills and Labour Supply	Ensure green skills are appropriately reflected in the Get GM Working Plan and supporting programmes/mechanisms (e.g., New Jobs & Career Services, Jobcentre Plus network)	GMCA	Ongoing Activity	3	Short		Distinctive
Skills and Labour Supply	Engage central Government on upcoming initiatives such as foundation apprenticeships for IS-8 sectors, Strategic Priorities Grant, and the Lifelong Learning Entitlement	GMCA & UKGov	New Activity	3	Medium		Distinctive
Skills and Labour Supply	Engage central Government on their planned investment in installer training for retrofit, energy efficiency, clean energy, green construction SMEs and digital tools for carbon accounting, as set out in the recent SME strategy	GMCA & Growth Company	New Activity	3	Short		Distinctive

How we will measure success

Strategically this Low Carbon Sector Development Plan fits within and alongside the updated Five-Year Environment Plan, building in particular on its eighth Aim, that *“Our economy will grow sustainably because of the interventions we make, benefiting our residents and business”*. This aim has four quantifiable overarching targets, being:

- At least 7% annual growth in total revenue / output from GM businesses in the sector
- 50% increase in businesses engaged on resource efficiency by GM programmes
- 50% increase in students completing training in relevant courses (baseline 2025)
- 15% of adult citizens with Carbon Literacy qualification

As outlined previously though this is a live document with a ten-year time horizon that will have an iterative approach to how it is written and implemented. Other potential metrics include:

Measures:

- Number of jobs created
- Amount of private sector investment leveraged towards the sector
- Number of people trained in key skills suitable for jobs in the sector
- Number of businesses supported via schemes to grow in the sector
- Number of businesses able to commercialise due to interventions
- Amount of floor space unlocked for the sector

Impacts:

- Increase in productivity and growth in the sector
- Increased earnings of businesses in sector
- Increased proportion of businesses signed up to the good employment charter
- Increased investment in R&D (public and private)
- Reductions in Carbon emissions from business in the sector