

# EXECUTIVE SUMMARY



# Executive Summary



The aim of Manchester's Climate Change Framework 2020-25 (the Framework) is that:

**Manchester will play its full part in limiting the impacts of climate change and create a healthy, green, socially just city where everyone can thrive.**

Its vision is for:

**A green city with walkable neighbourhoods, clean air, good jobs in successful businesses, warm homes and affordable energy, safe cycling routes and a public transport system that works for everyone.**

The Framework used a science-based targets approach to set a **zero carbon date** of 2038 and a **carbon budget** of 15m tCO<sub>2</sub> for the period 2018-2100 for the city.

It set **four headline objectives**: staying within our carbon budgets; climate adaptation and resilience; health and wellbeing; and inclusive, zero carbon and climate resilient economy. It identified **six priority areas** for action: buildings (existing and new); renewable energy; transport and flying; food; the things we buy and throw away; and green infrastructure and nature-based solutions.

## The purpose of this 2022 Update to the Framework is to:

- **Present the findings** of detailed modelling done to identify granular targets for reducing the city's direct emissions by 50%, to help the city stay within its carbon budget.
- **Provide an overview** of ongoing work carried out in support of the Framework's other headline objectives, notably on adaptation to climate change.
- **Recommend specific actions** for delivery at local, regional, and national level by government and the wider public sector, private companies and third sector organisations, and communities and individuals, that will support our transition to a zero carbon and climate resilient city.

## The city's direct emissions

Our carbon budget relates to our direct emissions. These are defined by the Tyndall Centre as carbon dioxide emissions from our energy system, i.e. the gas, electricity and liquid fuels used to power and heat our homes and businesses and to transport us around the city.

Manchester has not been reducing its direct emissions by the targeted 13% per year and so we are not currently on track to stay within our carbon budget and are at risk of missing our first milestone: to reduce the city's direct emissions by 50% by 2025.

This Update unpacks the sources of our current direct emissions to clarify where we need to focus our efforts to get back on track. It shows that buildings are responsible for 76% of our direct emissions and ground transport for 24%.

It then sets out in granular detail the scale of action needed to reduce our direct emissions from buildings and transport by 50%, and the scale of increase in renewable energy generation needed to support this, using an evidence base provided by the Anthesis SCATTER model.

## Scale of action needed to reduce direct emissions by 50%:

Modelling by SCATTER indicates the following scale of action is needed to halve the city's direct emissions:

### Buildings

- Over 84,000 homes to be retrofitted
- 21% reduction in energy demand from domestic heating and hot water
- 31% reduction in energy demand from domestic appliances and lighting
- 39% of homes to switch from gas heating to electric heat pumps
- 61% reduction in overall energy demand from commercial premises
- 45% reduction in overall energy demand from institutional buildings
- 58% reduction in overall energy demand from industrial buildings and processes
- 100% of new houses must meet best practice zero carbon standards

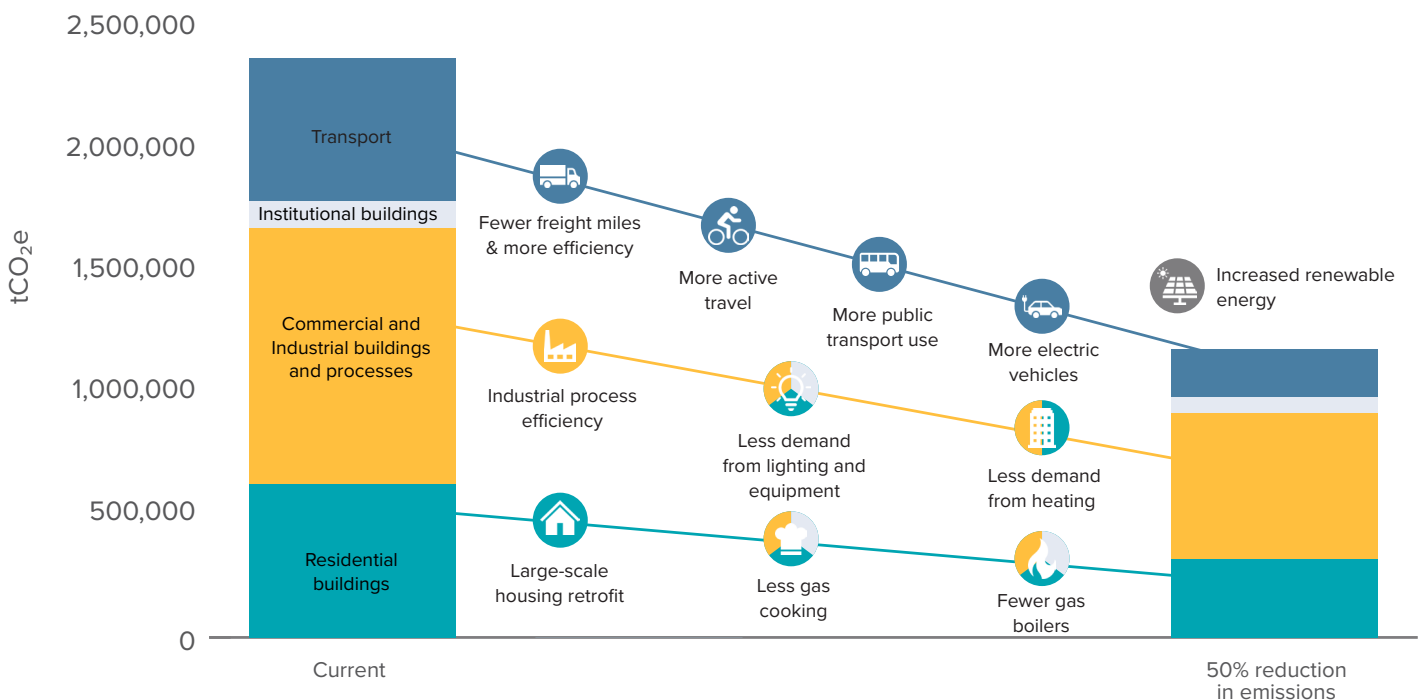
### Transport

- 30% reduction in overall distance travelled
- 20% of journeys to be made by active travel – walking/wheeling or cycling
- 20% of journeys to be made by public transport
- 80% of remaining passenger miles that are by cars, vans and motorbikes need to be in electric or hybrid electric vehicles
- 9% reduction in freight mileage and 71% increase in freight fuel efficiency

### Renewable Energy

- Access to 1,500 MW of energy from renewable sources:
  - 590 MW from small-scale solar photovoltaics
  - 600 MW from large-scale solar photovoltaics
  - 310 MW from large-scale offshore wind
  - 15 MW from local onshore wind
  - 9 MW from large-scale onshore wind

Graph 1: summary of the scale of action needed to reduce direct emissions by 50%



## CO<sub>2</sub>e savings

On meeting all the above targets, SCATTER estimates that our annual direct emissions will reduce by approx 900k tCO<sub>2</sub>, equating to a 50% reduction from the city's 2020 baseline.

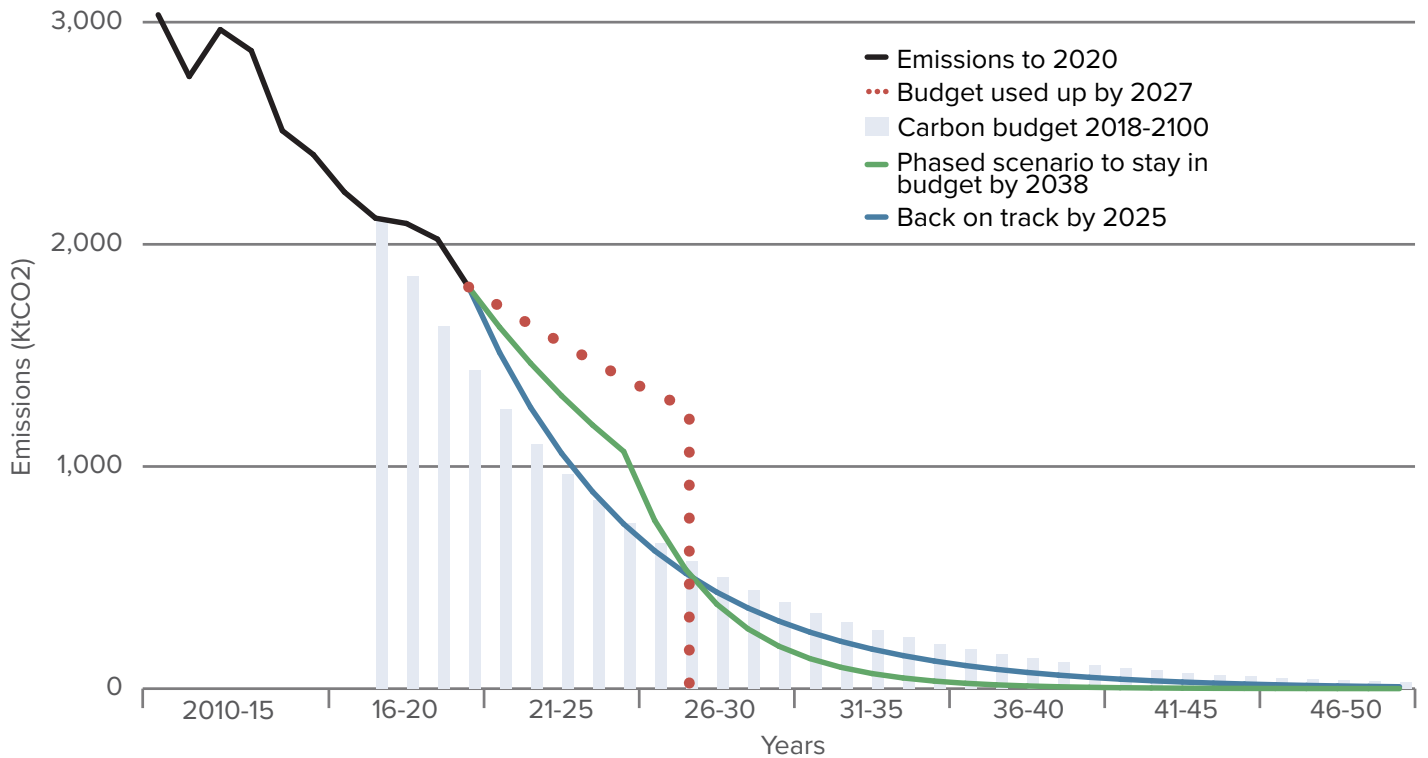
SCATTER estimates the cumulative tCO<sub>2</sub>e savings, based on a delivery timeline to 2030, which can be accelerated, will be 4.7m tCO<sub>2</sub>e.

## Staying within our carbon budget

Given the divergence from our original pathway, graph 2 sets out two scenarios for the city to remain within its carbon budget and reach zero carbon by 2038.

It does not identify a preferred scenario, rather, illustrates that an increased scale and urgency of action is needed to meet our goals.

**Graph 2: scenarios for the city to remain within its carbon budget and reach zero carbon by 2038**



## Consumption-based emissions

The city's indirect, or consumption-based, emissions are those that occur from the services and goods we buy, use, and ultimately dispose of. While they are not included within our carbon budget, indirect emissions are important as they are commonly 60% larger than direct emissions and so contribute to the city's overall climate impact.

Chapter 3.4 provides an overview of research by the University of Manchester to help the city understand its indirect emissions – it estimates the city's footprint was over 3m tCO<sub>2</sub>e in 2019 and identifies sectoral hotspots for us to focus on for maximum impact, including construction, food and drink, waste, and wastewater.

Chapter 3.5 presents a new agreement reached by members of Manchester's Climate Change Partnership (MCCP), with support from its Zero Carbon Advisory Group, which notes the importance of tackling aviation emissions through national policy to avoid displacement of emissions from one UK airport to another, and of international industrial collaboration to deliver the technologies and processes needed for zero emission flights.

## Adaptation and resilience

While bold action on climate change mitigation (reducing our emissions) is vital, the global and local climate is already changing, and many climate impacts are already 'locked in' and deemed irreversible even under the most ambitious emissions reduction scenarios.

Chapter 4 provides an overview of work by Manchester Metropolitan University and MCCP's Adaptation and Resilience Advisory Group to help the city assess its vulnerability to climate risk, define the characteristics of a climate resilient city, and establish principles to guide both ambition and practical action, including how green infrastructure and nature-based solutions can support these efforts.

## Health and wellbeing

The actions we need to take to reduce our emissions and adapt the city to climate change also have the potential to improve the health and wellbeing of Manchester's residents. Equally, actions that improve our health and wellbeing can also help to tackle the climate crisis.

Chapter 5 presents a summary of work by MCCP's new Health and Wellbeing Advisory Group and Manchester's Marmot Taskforce on the link between health inequalities and climate change, including creation of a tailored action plan, and the need for indicators to track climate and health.

## Inclusive, zero carbon and climate resilient economy

Meeting our goals on climate action can also help Manchester to establish a more inclusive economy where everyone can benefit from playing an active role in decarbonising and adapting the city to the changing climate.

Chapter 6 provides an overview of activity underway to build demand for, and increase supply of, green skills to make sure that local businesses and residents can make the most of the new opportunities that the shift to a zero carbon city offers.

## Co-benefits of climate action

The systemic transitions required to tackle the climate crisis within cities are complex and interlinking. This creates significant challenges in delivery but also means that action to tackle the climate crisis can help us address other priority issues including fuel poverty, food poverty, health inequalities, skills development, and jobs growth.

Throughout this Update, the co-benefits of climate action are highlighted and categorised by their potential to help us reduce our carbon emissions; boost our adaptive capacity; improve the health and wellbeing our communities; and increase the inclusivity, productivity, and sustainability of our economy.

## Challenges, enablers and examples of good practice

The transition to a zero carbon, climate resilient city presents significant economic, technical, institutional, societal, and regulatory challenges. This Update highlights a selection of these to provide context to the topics covered and the actions being recommended.

It also highlights where policies at local, regional, and national level are incentivising and enabling actions of a similar type and magnitude to reinforce the feasibility and credibility of the actions being recommended.

Finally, to illustrate that climate action is possible, the Update signposts examples of good practice from within Manchester, the wider city region and across the UK.

## Ensuring a just transition

Ensuring that all of Manchester's residents are protected from the impact of climate change, that actions to help the transition to a zero carbon and climate resilient city do not have a negative impact on the most vulnerable people, and that the costs of change do not fall unevenly on those that are least able to afford them, is a constant theme throughout this Update.

The recommended actions have been developed with this in mind and the cost of living crisis is recognised as a key challenge in chapter 7.

## Financing the transition

The cost of the transition to a zero carbon and climate-resilient city is significant. The [Local Area Energy Plan for Manchester](#) estimates the cost to decarbonise the city's energy system is over £13bn (£4 billion by 2030).

This level of capital investment is beyond the reach of public finances and so private finance is critical to our success. The scale of private funds available is sufficient to support substantial activity, however, new approaches must be developed to unlock this resource.

Chapter 8 summarises the challenges of developing climate measures at sufficient scale, volume, and predictability to attract the private capital investment needed to accelerate progress and achieve the ambitious climate change targets that Manchester has set.

## Recommended actions

To achieve our climate goals, action needs to be taken urgently and by everyone – by government at local and national level, by institutions and organisations in the public, private and voluntary sector, and by residents and communities across the city.

- To be delivered locally, where direct control lies in Manchester
- To work on at city-region level, with Greater Manchester partners

This Update has co-designed over 175 recommended actions organised into four categories according to where there is agency to act; that is, where there is direct control to deliver, affect or influence the required change or outcome:

- To advocate for national government to do
- To do differently, where there are opportunities to innovate

### These actions can be summarised as follows:

We need to **retrofit existing buildings** – our homes, institutions, industrial and commercial premises – to make them more energy efficient; they need to be better insulated, rely less on gas for heating, and use more efficient appliances and equipment.

We need to construct **new buildings** to high and rising standards of low carbon performance, covering operational and embodied energy, which ensures we do not add to the future cost of decarbonisation.

We need to **travel less** and **change the way we travel**, ensuring we chose the right mix of transport for each journey, prioritising active travel and public transport, particularly for short trips.

We need to rapidly reduce our dependency on fossil fuels and **deploy electric vehicles** at scale for both public and private transport.

We need to see a **rapid shift away from fossil fuels** to electricity for heating, transport, and industry. To support this, we need to **increase renewable energy generation**, both locally and at national level.

This needs to be coupled with a **step change in energy efficiency** across all sectors, and increased adoption of **smart grid** technologies and **local storage** to balance energy supply and demand for maximum efficiency.

We need to continue to explore the **role of hydrogen** in our future energy mix, including to support decarbonisation of industry, transport, and heating.

We need to **produce goods and services more sustainably**, moving to a circular economy, alongside becoming more sustainable consumers.

We need to halve our **consumption-based emissions by 2030**, before halving them once again by 2036.

We need to **reduce waste**, including unnecessary **food waste**, and manage unavoidable waste as sustainably as possible, maximising reusing and recycling.

We need to work collaboratively across the aviation industry, with other core cities, national government, and international partners to ensure **aviation emissions** are reduced in line with the Paris Agreement.

We need to **understand our exposure to climate change risk** and make detailed plans that support all our residents, and all parts of our city, its economy and natural environment to adapt.

This includes prioritising action to ensure our **critical infrastructure is resilient** to climate change and ensuring our **most vulnerable communities are protected**.

We need to monitor the **impact of climate change on health and wellbeing** and target policies and measures that improve outcomes for both.

We need to **create demand for green skills** and provide the right training and qualifications to enable employers and residents to capture the new opportunities of the green economy.

We need to ensure all the investments we make are low carbon and resilient to climate change and we need to **develop innovative models to unlock private investment** into both climate mitigation and adaptation.

## Key messages

Urgent action is needed to **reduce direct emissions** from our buildings and ground transport, and to increase renewable energy generation, if Manchester is to stay within its carbon budget.

Decisive action is needed to assess the city's vulnerability to climate change and to ensure we are adapting our infrastructure, buildings, economy, and residents to **be resilient to a changing climate**.

Everyone has a role to play – individuals, organisations, local and national government – and there is a great deal we have the power to achieve locally, if we **work collaboratively**.

The cost of transitioning to a zero carbon, climate resilient city cannot be borne solely by the public purse, so we need to find innovative ways to **unlock private finance investment**.

Tackling the climate crisis brings opportunities to **deliver wider strategic ambitions**, including improving people's health, reducing fuel and food poverty, creating new jobs and economic growth, and delivering a greener city for everyone.

## Next steps

This Update is a call to action for everyone in Manchester. MCCP will champion delivery of the recommendations set out, but everyone needs to increase the pace and scale of their own activity, and reach out to support and collaborate with others, if we are to succeed in achieving the city's ambitions.

To support the prioritisation of effort, in particular for reducing direct emissions, MCCP has asked Manchester Climate Change Agency (MCCA) to assess the comparative impact of the recommended actions, building on the insights already provided by the detailed emissions baseline and 50% reduction targets in this Update.

MCCP has also asked MCCA to develop options for tracking the city's progress towards its zero carbon and climate resilient goals, in a way that enhances the existing Annual Reports. MCCP members and its independent Advisory Groups will support all these activities.