1000 CITIES

FOR CARBON FREEDOM

CLIMATE ACTION BEST PRACTICES IN UK CITIES

ACKNOWLEDGEMENTS

1000 CITIES would like to thank the following contributors for their time taken to conduct interviews for this case study report:

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Funding provided by:

PATHWAY TO PARIS

ROTHSCHILD FOUNDATION

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December 2020

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EXECUTIVE SUMMARY

INTRODUCTION

Many UK cities have been recognised locally and internationally for their groundbreaking work on climate action. They have positioned themselves as leaders, putting in place and acting upon ambitious emissions reductions targets aligned with the Paris Agreement, which aims to limit global temperature increase to "well below 2°C above pre-industrial levels, and to pursue efforts to further limit the increase to 1.5°C."[1] At the same time, these cities have and continue to face many challenges in meeting the ambitious targets that they have set.

There is much about climate action that British cities can learn from one another and that local governments around the world can learn from them. With this in mind, this report shares insights and provides best practice recommendations from case studies of 12 UK local governments: Birmingham, Bristol, Cardiff, Glasgow, Hull, Leeds, Liverpool, London, Manchester, Newcastle, Oxford, and Somerset. The pages that follow draw lessons from their persistent efforts to advance climate action and their willingness to honestly and boldly reflect on the action that is required.

CITIES ARE CRITICAL TO CLIMATE ACTION

We have already begun to feel the negative impacts of climate change. According to the global scientific community, we face the risk of these impacts becoming catastrophic and irreversible if we continue with current rates of land degradation and fossil fuel use. Urgent, transformational action is needed from everyone, everywhere, with no corner left unturned.

Cities are crucial to the effort to combat climate change, as they directly or indirectly influence approximately 70% of global greenhouse gas emissions.[2] Cities are also at the forefront of climate action, since they can implement solutions at impactful scales, but are often also able to put policies and strategies in place over relatively quick timeframes compared to higher levels of government. With their leadership, innovation, and nimbleness, cities are magnifying their efforts by sharing and comparing their efforts and resources, in what has become a global movement of municipal climate action.

FINDINGS AND RECOMMENDATIONS

This report can be used by cities interested in developing and implementing bold climate plans and actions. The first section synthesizes key learnings and recommendations from the case studies. The second section provides detailed case studies of the actions and experiences of the 12 case study cities, which can be referred to for further learnings, additional links and references, and the contact information of representatives from the cities' climate departments.

1 "The Paris Agreement: Essential Elements." United Nations Climate Change, https://unfccc.int/process-and-meetings/theparis-agreement/the-paris-agreement

2 "City Action to Address the Climate Emergency." C40, www.c40.org/other/city-commitments.

The report makes recommendations related to eight key themes.

1. EMISSIONS REDUCTIONS TARGETS AND INVENTORIES

Greenhouse gas (GHG) emissions inventories and targets lay the foundation for city climate action. GHG emissions targets define the city's level of ambition, while detailed emissions inventories that are broken down by sector, activity, and neighbourhood provide transparency on a city's current state. Together, targets and inventories enable accountability and monitoring of a city's climate action efforts.

All 12 local governments studied had net-zero GHG targets, with 10 aiming for net-zero emissions by 2030. The most progressive cities accounted for the consumption and production of goods and services in their inventories, going above and beyond typical inventory inclusions.

The report recommends that cities:

- Set ambitious net-zero GHG emissions targets as soon as possible.
- Include GHG emissions from consumption and production of goods and services in inventories and in GHG emissions reductions targets.
- Undertake energy and GHG emissions modelling that also captures financial and socioeconomic impacts.

2. CARBON BUDGETS AND ANNUAL REPORTING

In order to keep global warming within 1.5°C, cumulative global GHG emissions must be kept within approximately 336 GtCO2e as of the beginning of 2020.[3] This number is the global carbon budget. By adopting a community-wide carbon budget that adheres with this global cap, cities can help the planet get on track to limit global warming. The boldest case study cities were those that created carbon budgets alongside their GHG emissions reduction target. This requires those cities to consider carbon emissions when making all decisions. In addition, they must report annually on their GHG emissions and, if required, readjust future years' budgets.

The report recommends that cities:

- Adopt carbon budgets that align with IPCC recommendations for limiting warming to below 1.5°C.
- Monitor and report on progress towards the target and carbon budget on a yearly basis.
- Develop sector-specific targets and carbon budgets.

3 This amount is based off of the International Panel on Climate Change (IPCC) Fifth Assessment Report (AR5). While the Sixth Assessment Report is anticipated to be released in 2022, new climate models put this number as high as 560 GtCO2e, illustrating the need to periodically evaluate and adapt to the latest climate science. See: Riahi, K. et al. The Shared Socioeconomic Pathways and their energy, land use, and greenhouse gas emissions implications: An overview, Global Environmental Change, Volume 42, Pages 153-168, 2017, ISSN 0959-3780, DOI:110.1016/j.gloenvcha.2016.05.009

3. CLIMATE EMERGENCY DECLARATIONS

Climate emergency declarations are pieces of legislation passed by governing bodies asserting and putting on record their support for taking urgent action on climate change. All of the cities studied had declared a climate emergency. They are among over 1,500 national, sub-national, and local governments that have declared a climate emergency worldwide. These declarations serve as a means to authorise bold action, including setting ambitious climate targets and timelines, developing or upgrading climate action plans, and committing to monitoring and reporting on progress.

The report recommends that cities have council declare a climate emergency, including direction to:

- Adopt GHG emissions targets and carbon budgets that align with IPCC's 1.5°C warming limit;
- Adopt a climate lens to be included in all relevant council decisions and reports;
- Divest city pension funds from fossil fuels;
- Develop or update the city's climate action plan; and
- Support any other actions that are key to advancing the city's climate action.

4. CLIMATE ACTION GOVERNANCE AND RESOURCE ALLOCATION

Climate action requires resources from city departments, as well as support from Council, residents, local business, and organizations. Among the best practice cities, at least one member of council is assigned climate change action as part of their portfolio. City staff are also key to driving climate action, with most cities noting that they ideally need more staff to get them on track to their targets.

At the same time, Council and staff draw on support from the broader community. All 12 cities studied had climate action task forces. Many of these were public-private partnerships that brought together members of academia, climate advocacy groups, faith-based groups, city agencies, the private sector, and at least one member of council. This approach enabled cities to hit the ground running with partners ready to support and/or implement elements of the cities' climate action plans.

The report recommends that cities:

- Assign at least one member of council to the climate change portfolio.
- Allocate sufficient staff and capital resources for climate action early to jumpstart efforts and achieve benefits and paybacks sooner.
- Establish and empower a climate action task force to develop and deliver the climate

action plan, including membership from academia, climate advocacy groups, city agencies, the private sector, and at least one representative from Council.

5. PUBLIC ENGAGEMENT AND EDUCATION

Engagement and education are critical to climate action planning. Done well, they can help a city establish implementation partners, ensure uptake of climate action programmes, and create impetus for council approval of climate plans.

Best practice cities invested significant time and effort in raising awareness of the city's role in responding to climate change, as well as engaging citizens in a way that enabled them to shape the city's plan and, in some cases, help with implementing and monitoring it. Cities solicited input from members of the public, community groups, non-profits, businesses, and climate experts through citizens' juries and assemblies, advisory groups, and multi-stakeholder climate action task forces. These initiatives helped create widespread public support for climate action and enabled the cities to develop partnerships to deliver on climate targets.

The report recommends that cities:

- Educate and inform citizens about the importance of climate action efforts, what the city is doing, and how they can help.
- Establish citizens' assemblies or juries composed of residents randomly selected from the public to advise on appropriate actions and targets for the City.
- Be transparent in community climate action planning engagement efforts, for example, by livestreaming citizens' assemblies.
- Establish or work with youth boards and summits to engage young people on city climate action.
- Establish multi-stakeholder task forces, with representation from council, city departments, and a variety of community groups (businesses, academia, environmental groups, etc.), to oversee climate action planning and implementation. Ensure that representatives from marginalised populations are also included in this group and other engagement efforts.
- Develop education and retraining programmes to transition workers to low-carbon industries.

6. CLIMATE ACTION NETWORKS

All 12 local governments are members of climate action networks. Participation in these networks helps to accelerate local climate action, filling in gaps where support from higher levels of government or expertise may be lacking. Participating cities benefit by testing new

and innovative GHG emissions reduction approaches, sharing tips for implementation efforts, boosting their local and international profiles, encouraging one another to increase their levels of ambition, and more.

The report recommends that cities:

- Sign on to global commitments on city climate action and participate in climate action networks.
- Seek opportunities to support other cities through sharing and replicating successful practices.

7. CLIMATE ACTION IMPLEMENTATION

Many of the most successful actions and plans undertaken by the cities studied are those that jointly address the climate emergency alongside other needs or issues, such as energy poverty, air quality, and health. For example, building retrofit programmes that improve energy efficiency in low-income households can help reduce energy bills and alleviate energy poverty. Similarly, measures to improve transit, as well as walking and cycling infrastructure, can decrease air pollution from cars and improve health. Finally, locally-owned renewable energy systems help cities gain energy independence and create local revenue.

The report recommends that cities:

- Prioritise actions that align with other city priorities, such as health and poverty reduction.
- Develop locally owned renewable energy generation systems and distributions networks.

8. CLIMATE ADVOCACY

One of the top challenges noted by the cities studied was the need for support from higher levels of government. Cities said that, to deliver on their emissions reductions goals, they needed more funding from higher levels of government; they wished to see more funding for national emissions reductions strategies and infrastructure, as well as for the cities themselves to deliver tailor-made projects specific to their contexts and needs.

The report recommends that cities:

- Commence work on advocating for national action, collaboration, and funding as early as possible.
- Collaborate with other cities to develop coordinated asks of upper levels of government.
- Adopt a council motion to advocate for climate action at the federal level.

CONCLUSION

UK cities are leading the way on climate action, setting aggressive targets and calling on higher levels of government to support their on-the-ground efforts to transition to zero-carbon economies. While the 12 case study jurisdictions demonstrated success in climate action, all believed they faced significant challenges with respect to meeting their climate targets. This illustrates that much more work has yet to be done. Through their shared learnings, cities can continue to support and push one another to take bolder action and achieve the level of ambition required to make the Paris Agreement a reality.

INTRODUCTION

GUIDE TO THIS REPORT

This report is a resource for local governments seeking to take bold climate action in the UK and beyond. The report is divided into two distinct parts:

Part I is a summary of best practices in local government climate action from the experiences of 12 UK municipalities.

Part II consists of 12 local government case studies, developed from a combination of desk research and interviews with local government representatives.

GLOBAL CONTEXT

In December 2015, the Paris Agreement, a global framework for the climate crisis that requires a global mobilisation, was adopted by representatives of 196 state parties.

Cities are crucial to the effort to curtail climate change, as cities directly or indirectly influence approximately 70% of GHGs. According to C40, an international coalition of cities leading on climate action, in order to give ourselves even a 50% chance of achieving the Paris Agreement targets, cities will need to collectively peak their GHG emissions by 2020.[1] Recognising that a 50% chance is not enough, many cities are taking these efforts further, declaring climate emergencies and creating ambitious climate plans to reduce their GHG emissions at far greater rates than their national counterparts.

PATHWAY TO PARIS AND 1000 CITIES

The 1000 CITIES Initiative for Carbon Freedom (1000 CITIES) was born out of Pathway to Paris, a nonprofit organisation which aims to turn the Paris Agreement into reality by raising awareness of the urgency of the global climate crisis and offering innovative and ambitious solutions for combating climate change.[2] Since 2015, Pathway to Paris has put on concerts in connection with the United Nations Framework Convention on Climate Change (UNFCCC) and other climate events. Hosted by musicians, artists, academics, and mayors, these events have reached more than 100,000 audience members. To push awareness into action, Pathway to Paris established 1000 CITIES to call upon city leaders to commit to zero GHG emissions and 100% renewable energy as soon as possible, with the idea that if this is achieved, then so too could the targets of the Paris Agreement.

To advance this call to action, 1000 CITIES is providing technical and financial support to local governments in developing and/or amplifying their climate action plans. This best practice report serves as a tool for cities wishing to ramp up their efforts in climate action by identifying the successes and challenges of leading UK cities.

1 "City Action to Address the Climate Emergency." *C40*, www.c40.org/other/city-commitments.

2 *Pathway to Paris*, https://pathwaytoparis.com/.

THE GLOBAL CARBON BUDGET

In its 2018 Special Report on Global Warming of 1.5°C, the Intergovernmental Panel on Climate Change (IPCC) highlights the likelihood of catastrophic impacts from global warming of 1.5°C. The report estimates that in order to give ourselves a 66% chance of keeping global temperatures within 1.5°C above pre-industrial levels, we would have to limit our GHG emissions from 2018 onwards to 420 GtCO2e.[3]

By 2018, the global rate of GHG emissions was approximately 42 GtCO2e per year, which, by the beginning of 2020, would have left us with a budget of 336 GtCO2e. In the fallout from the COVID-19 pandemic, 2020 GHG emissions are likely to have decreased by just 4% to 7% from the prior year.[4] Even under the high estimate, we would still be falling short of the 7.6% reduction in global GHG emissions required each year in order to track towards the 1.5°C warming goal.[5] In other words, the carbon budget is now smaller than reported by the IPCC in 2018, despite COVID-19.

3 IPCC, 2018: Summary for Policymakers. In: *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty* [Masson-Delmotte, V., P. Zhai, H.-O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J.B.R. Matthews, Y. Chen, X. Zhou, M.I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, and T. Waterfield (eds.)]. In Press.

4 Le Quéré, C., Jackson, R.B., Jones, M.W. et al. Temporary reduction in daily global CO2 GHG emissions during the COVID-19 forced confinement. *Nat. Clim. Chang*. (2020). https://doi.org/10.1038/s41558-020-0797-x.

5 United Nations Environment Programme (2019). *GHG emissions Gap Report 2019*. UNEP, Nairobi.

The difference between 1.5°C and 2°C warming

While a 0.5°C difference may seem trivial, its negative impacts on a global scale are not. The figure below illustrates a few of the differences in projected impacts, including more than double the population exposed to extreme heat and 30% greater decline in coral reefs.

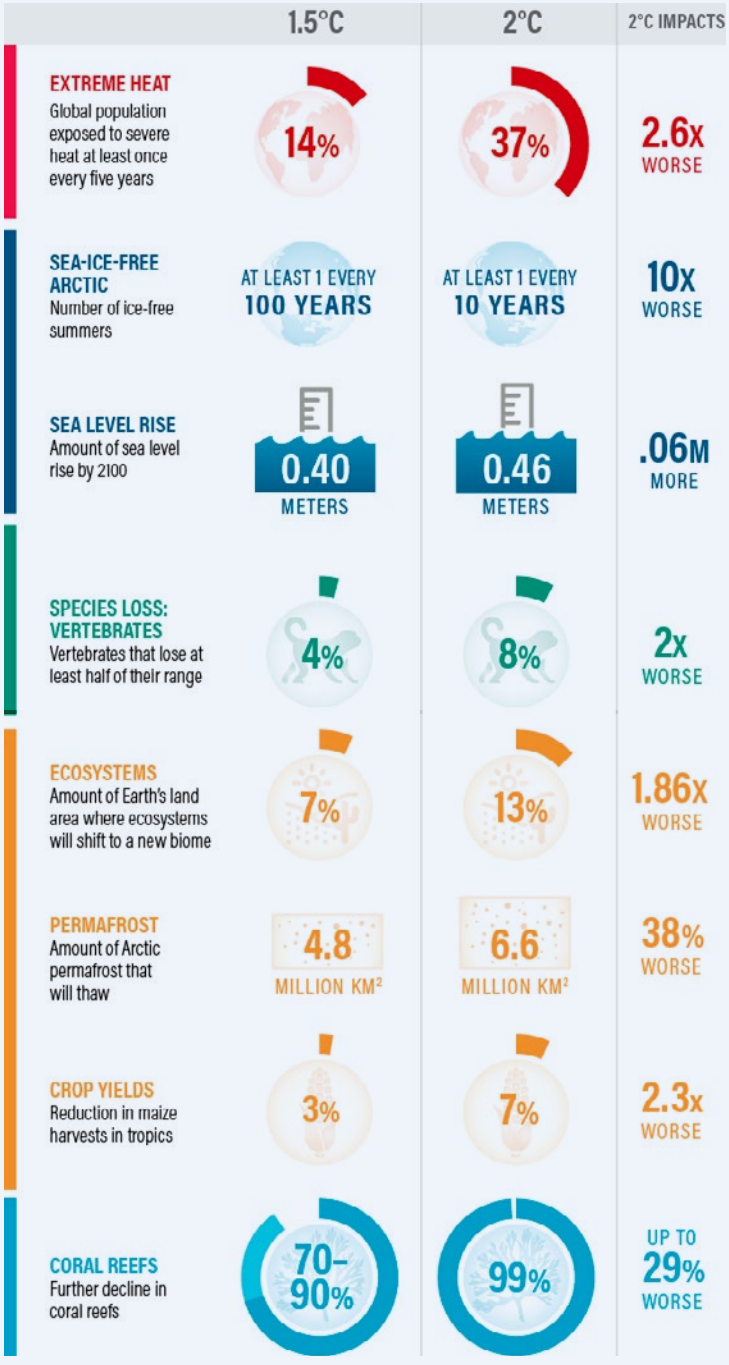


Image from World Resources Institute.

EMISSIONS IN THE UK

In 2017, the UK was responsible for 0.4 Gt of GHG emissions, making it the 16th greatest emitter worldwide and 13th in the world for per capita GHG emissions.[6] Since 2010, the UK has made strides in acting on climate change, reducing its GHG emissions by nearly 30% from 2010 to 2019 and, reaching its lowest level of GHG emissions since 1888.[7] Much of this can be attributed to its reduction in the use of coal for electricity generation, which has been nearly phased out, meaning that the country—and its cities—will have to ramp up efforts in other areas to continue along this trajectory.

Current government projections show that the UK will miss the legally binding carbon targets that it pledged to under the UNFCCC; under current trends, only 10% of the 31% reductions that it committed to for 2030 will be attained.[8]

By that time, 92% of the UK's population is projected to be living in cities, which currently account for approximately half of the country's GHG emissions.[9,10] Fortunately, local governments in the UK have also made significant progress in reducing their GHG emissions and positioned themselves as global leaders in urban climate action. In their recent 'Cities A-List,' the Carbon Disclosure Project identified five UK cities among the top worldwide for climate action and transparent disclosure of their GHG emissions. These were: Greater Manchester, Leicester, Coventry, London, and BCP (Bournemouth, Christchurch, and Poole).[11] Efforts they have championed include:

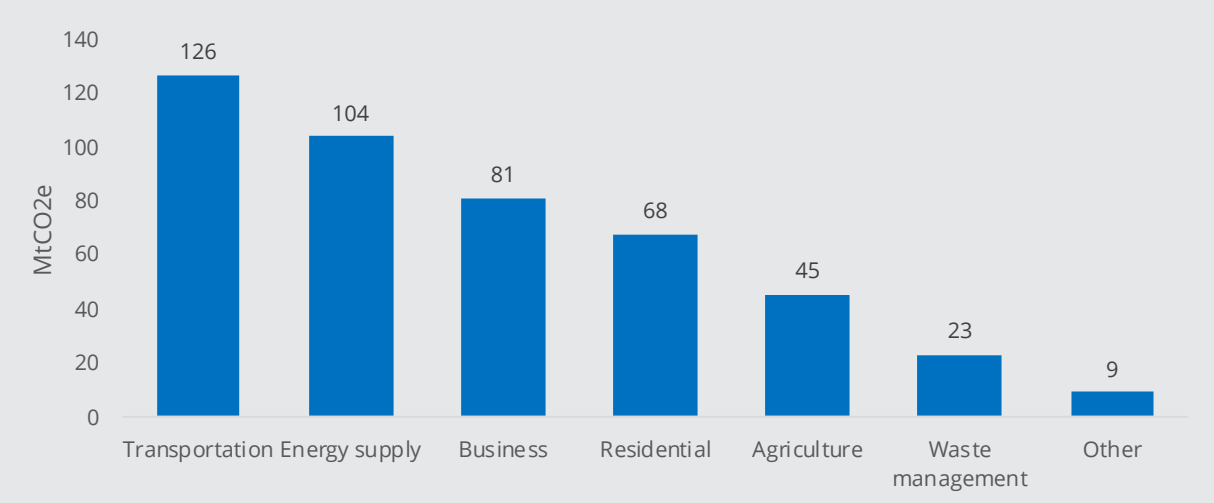


Figure 1. UK greenhouse gas emissions by sector, 2018. (UK National Statistics, 2020)

6 "Each Country's Share of CO2 Emissions." *Union of Concerned Scientists*, 11 May 2020, www.ucsusa.org/resources/each-countrys-share-co2-emissions.

7 "Analysis: UK's CO2 Emissions Have Fallen 29% over the Past Decade." *Carbon Brief*, 26 Mar. 2020, www.carbonbrief.org/analysis-uks-co2-emissions-have-fallen-29-per-cent-over-the-past-decade.

8 ibid.

9 Milligan, Rebecca. "The UK's Cities Are Leading the Charge to Reduce Carbon GHG emissions." *Energy Saving Trust*, 29 Jan. 2019, www.energysavingtrust.org.uk/blog/uk%E2%80%99s-cities-are-leading-charge-reduce-carbon-%20GHG emissions.

10 Bailley, Adeline. "Cities Have Led the Way in Reducing UK Carbon Emissions, but Should Do More to Tackle Transport Pollution." *Centre for Cities*, 22 Feb. 2018, www.centreforcities.org/blog/cities-led-way-reducing-uk-carbon-emissions-tackle-transport-pollution/

11 "Cities A List 2019." *CDP,* 2020. https://www.cdp.net/en/cities/cities-scores

- requiring all new buildings to be built to net-zero standards;
- the development of downtown zero GHG emissions zones;
- retrofitting thousands of buildings to improve energy efficiency;
- establishing training programmes to transition workers to a zero-carbon economy;
- expanding greenspace and walking and cycling networks to improve environmental and residents' health; and
- electrifying transit and city fleet.

While there is much work yet to be done, there is much that has been learned from the progress leading UK cities have made.

The following report summarises local government best practices in climate change action (Part I, p.12), as identified through case studies of 12 UK local governments (Part II, p.26). The intent is to share best practices with other local governments in the UK, and around the globe, to help them succeed in and accelerate their work to achieve a 'fair share' trajectory aligned with the Paris Agreement target.

PART 1 - LESSONS LEARNED FROM UK CITIES

Much work remains to be done globally to meet the Paris Agreement targets. The UK is no exception to this, as its current trajectory shows that it will fall short of its nationally-pledged contributions, which themselves have been deemed insufficient to meet the requirements of a 1.5°C pathway.[12] Many UK cities, however, have adopted much more aggressive targets than the federal government, joining a global movement of local government leadership in climate action.

This section summarises findings and recommendations from case studies of climate action in 12 leading UK local governments: Birmingham, Bristol, Cardiff, Glasgow, Hull, Leeds, Liverpool, London, Manchester, Newcastle, Oxford, and Somerset. The aim of this section is to highlight successes that may be replicated by other cities as they advance their work on climate action, as well as challenges.

The final section of this report that follows provides brief case studies of the 12 UK local governments that informed the best practice review. These are more detailed accounts of cities' practices and experiences that are particularly useful for cities seeking examples from similarly sized or situated cities.

Table 1 summarises the cities included in the study, as well as key features of their climate action planning work.

12 Climate Action Tracker. United Kingdom. Fair Share. https://climateactiontracker.org/countries/uk/fair-share/

Table 1. Summary of case study cities.[13]

	Population	Per capita emissions	Climate target	Carbon budget	Climate emergency declaration	'Climate lens' for council decisions
Birmingham	1.1 million	3.7	0x30		Jun-19	
Bristol	460,000	3.5	0x30	D	Nov-18	Yes
Cardiff	360,000	4.1	0x30		Mar-19	
Glasgow	620,000	4.2	0x30	C	May-19	Yes
Hull	260,000	4.1	0x30	C	Mar-19	
Leeds	785,000	5.1	Towards 0x30		Mar-19	Yes
Liverpool	490,000	3.6	0x30	C	Jul-19	Yes
London	8.8 million	3.3	0x30	Yes	Dec-18	
Manchester	550,000	3.8	0x30	Yes	Jul-19	Yes
Newcastle	300,000	4.4	0x30		Apr-19	Yes
Oxford	155,000	4.4	0 before 50	Yes	Jan-19	
Somerset	555,000	5.9	0x30		Feb-19	Yes

D = Under development
C = Being considered

Note: Blank entries indicate either that the City does not incorporate that feature in their climate action planning, or that they did not provide explicit information supporting this.

13 Source for CO2 emissions: National Statistics, UK local authority and regional carbon dioxide emissions national statistics: 2005 to 2017, UK local authority and regional estimates of carbon dioxide emissions. Published 27 June 2019; From: Department for Business, Energy & Industrial Strategy.

EMISSIONS TARGETS AND INVENTORIES

OF CASE STUDY CITIES WITH:

Net-zero emissions targets	12
Production and consumption emissions accounting	5
GPC-compliant inventories	6

GHG emissions inventories and targets lay the foundations for city climate action. Detailed GHG emissions inventories that are broken down by sector, activity, and neighbourhood provide transparency on a city's current state, as well as clarity on how any proposed actions will contribute to achieving its targets. Similarly, GHG emissions targets define the city's level of climate action ambition and enable accountability through ongoing monitoring and reporting on progress made towards it. Targets should ideally be coupled with a carbon budget, discussed in the next section.

Targets: All case study cities set zero GHG emissions targets, by 2050 at the latest, with most set by 2030. One rationale for these was that ambitious, Council-approved targets signal to citizens, businesses, the broader public, and potential investors that the City is serious about climate change and prepared to advance low-carbon programmes and infrastructure projects in a reliable, expedient manner. Similarly, having ambitious targets helps to attract innovative low-carbon businesses, think-tanks, and other related organisations which help support a growing low-carbon economy.

Inventory scope: The ambition of these targets was not only attributed to aggressive timelines, but also the scope of GHG emissions that they covered. Some of the most progressive cities' inventories accounted for consumption and production GHG emissions, as well as their share of aviation GHG emissions (see Manchester, London, and Bristol). Including these additional GHG emissions within their inventories means taking ownership of far more than the status quo, and as a result, requiring even more bold and innovative actions and community partnerships.

Modelling: Case study cities undertook energy and GHG emissions modelling to provide the evidence necessary for effective action plan development. When coupled with financial and socioeconomic impact analysis, these studies support implementation plan development, help justify expenditures, communicate co-benefits, and develop low-carbon programmes. For example, cities that demonstrate the impacts of low-carbon actions on health indicators can use this information when seeking support or partnership from health authorities, or buy-in from citizens.

Emissions Inventories

City emissions inventories and targets are based on the concept that you can only manage what you measure. In order to answer the question of what to measure and how, the Global Protocol for Cities (GPC) was developed by the World Resources Institute, C40, and ICLEI - Local Governments for Sustainability. Generally speaking, city inventories count emissions generated from activities occurring within a city's boundary and that the city has control or influence over, from the sectors and sources listed below.

STATIONARY ENERGY

- Residential, commercial, and institutional buildings and facilities
- Manufacturing industries and construction
- Energy industries
- Agriculture, forestry, and fishing activities
- Fugitive emissions from coal production and oil and natural gas systems

TRANSPORTATION

- On-road
- Railways
- Waterborne navigation
- Aviation
- Off-road

WASTE

- Solid waste disposal
- Biological treatment of waste
- Incineration and open burning
- Wastewater treatment and discharge

INDUSTRIAL PROCESSES AND PRODUCT USE (IPPU)

- Industrial processes
- Product use

AGRICULTURE, FORESTRY, AND LAND USE (AFOLU)

- Livestock
- Land
- Other agriculture

Recommendations for Emissions Targets and Inventories

- Set ambitious net-zero GHG emissions targets as soon as possible.
- Include GHG emissions from consumption and production of goods and services in inventories and in GHG emissions reductions targets.
- Include GHG emissions from aviation in GHG emissions inventories and reduction targets.
- Undertake energy and GHG emissions modelling that also captures financial and socioeconomic impacts.

CARBON BUDGETS AND ANNUAL REPORTING

OF CASE STUDY CITIES WITH:

Carbon budgets[14] 

Sector-specific targets 

As has been mentioned, in order to remain within 1.5°C warming, global GHG emissions must be kept within a carbon budget of approximately 336 GtCO2e as of the beginning of 2020. Adopting a community-wide carbon budget in addition to a GHG emissions target helps to ensure adherence with this 336 GtCO2e cap.

The boldest targets among case study cities were those with associated carbon budgets, i.e. targets that accounted for cumulative GHG emissions from the baseline to the target year, versus the typical GHG emissions targets that focus solely on annual GHG emissions in the target year.

A carbon budget ensures that GHG targets include annual, declining GHG emissions caps, set according to a jurisdiction's share of the 1.5°C warming global carbon budget. To stay within the carbon budget requires annual GHG emissions reporting and, if necessary, readjustment of future years' budgets.

Carbon budgets are a science-based approach to setting GHG emissions targets. This best practice remains on the fringes of climate action; only three of the twelve case study local governments have adopted one (London, Manchester, and Oxford).

Additional best practices in carrying out the carbon budget approach include applying these at the sector level, alongside sector-specific inventories and targets. This facilitates implementation planning by indicating the necessary timing and scale of specific actions. Manchester breaks down emissions and targets by sector (e.g. arts and culture, sport, social housing, etc.), an approach that helps it engage directly with the sources of emissions.

Finally, reporting annually and publicly on progress towards city GHG emissions targets and carbon budgets helps ensure progress, transparency, and accountability.

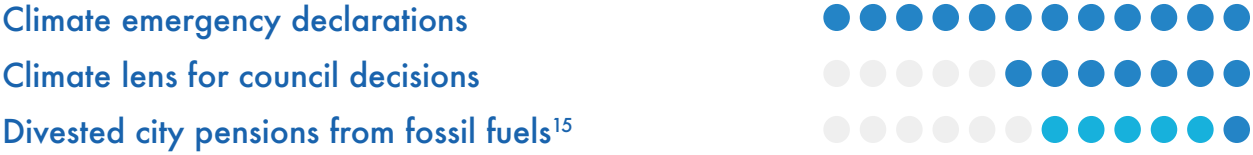
14 Note: Light blue dots indicate that cities are considering or developing strategies to implement carbon budgets.

Recommendations for Carbon Budgets and Annual Reporting

- Adopt carbon budgets that align with IPCC recommendations for limiting warming to below 1.5°C.
- Monitor and report on progress towards the target and carbon budget on a yearly basis.
- Develop sector-specific targets and carbon budgets.

CLIMATE EMERGENCY DECLARATIONS

OF CASE STUDY CITIES WITH:



Over 1,500 national, sub-national, and local authorities worldwide, including the UK government, have declared climate emergencies.[16] Climate emergency declarations are pieces of legislation passed by governing bodies asserting and putting on record their support for taking urgent action on climate change.

All of the cities studied had declared climate emergencies. Climate emergency declarations have allowed cities to assert their stance on the gravity of the climate crisis. They also serve as a means to authorise bold action, including setting ambitious climate targets and timelines, developing or upgrading climate action plans, and committing to monitoring and reporting on progress.

In addition, in response to their emergency declarations, some cities studied, such as the Cities of Leeds and Liverpool, incorporated 'climates lenses' into their decision-making processes. This involves a requirement for all relevant reports to Council to provide details on the implications of any decisions on climate change, and a report presented at each Council meeting outlining progress towards addressing climate action targets (until they have been achieved). The City of Bristol has taken this further, requiring that the GHG emissions of all major projects be quantified and reported in aggregate alongside their financial budget. Climate emergency

15 Note: Light blue dots indicate that cities are considering or developing strategies for divesting their pension funds.

16 Climate Mobilization. (2020). *The Climate Emergency Movement Has Arrived.* Retrieved from https://www.theclimatemobilization.org/climate-emergency/

declarations have also prompted some cities to consider the divestment of city pension funds from fossil fuels, as is currently being undertaken by the City of London.

Recommendations for Climate Emergency Declarations

Have council declare a climate emergency, including direction to:

- Adopt GHG emissions targets and carbon budgets that align with IPCC's 1.5°C warming limit;
- Adopt a climate lens to be included in all relevant council decisions and reports;
- Divest city pension funds from fossil fuels;
- Develop or update the city's climate action plan; and
- Support any other actions that are key to advancing the city's climate action.

CLIMATE ACTION GOVERNANCE AND RESOURCES

OF CASE STUDY CITIES WITH:

Climate action task force	●●●●●●●●●●●●●
Council member sitting on the task force	○○○●●●●●●●●●●

Action on climate change requires resources from across city departments, as well as support from Council, residents, local businesses, and organisations alike. The extent and efficacy of a city's work on climate action are reflections of both the amount and nature of resources allocated to it. Sufficient staff are needed to champion the work, while council members must support it when it comes time to vote on projects and budgets. When and how community members are brought on board is another key factor, as they can act as champions and resources if given sufficient opportunities and channels for involvement.

Among the best practice cities, at least one member of council was assigned climate change action as part of their portfolio. Council member(s) often sat on the city's task force for climate action, which helped to ensure that the imperatives and lessons learned were relayed to and supported by council.

City staff were, of course, also key to driving climate action plans forward. Nearly every city studied noted that their resources in this regard were insufficient to take on the level of work that was required to meet their targets. The City of Newcastle amplified their climate action resources by embedding climate action in the work plans of nearly all City departments. Another city emphasized the importance of ensuring that adequate staffing and resources are provided from day one to allow for the work to be done strategically, sufficiently, and expediently. The longer cities delay in resourcing, the more difficult and costly it becomes to reach their GHG emissions targets. The City of London notes this in its climate action plan: 'If we delay our [energy efficiency] actions until 2022, it will cost around £2.5bn more to achieve the same cumulative carbon reductions.'

Many of the cities studied increased their capacity by establishing public-private task forces made up of stakeholders from academia, climate advocacy groups, faith-based groups, city agencies, the private sector, and at least one representative from City Council. The task forces' mandates ranged from offering advisory support to developing and overseeing the implementation of climate action plans. They also play an important role in public enagement (see Engagement and Education, page 23). Such collaborative approaches offered significant benefits, as climate plans could be brought to council with a collection of task force members already prepared to partner, support, and/or implement many of the proposed actions.

Leeds' multi-stakeholder commission, for example, not only helped design the City's plan, but oversees its implementation and reports to Council annually on the plan's progress. Similarly, Glasgow's multi-stakeholder partnership, Sustainable Glasgow, is chaired by the City's Leader of Council and has been critical to successful implementation of climate action. In Manchester, the City's Climate Change Partnership, which brings city councillors together with representatives of key sectors and organisations across the city, has enabled Council members to understand how and when they can use their powers to provide support, incentives, and standards to enable the community to take action. As a result, Manchester's climate action plan comes with partners and supporters already lined up, making it easier to jump-start implementation.

Recommendations for Climate Action Governance and Resourcing

- Assign at least one member of council to the climate change portfolio.
- Allocate sufficient staff and capital resources for climate action early to jump start efforts and achieve benefits and paybacks sooner.
- Establish and empower a climate action task force to develop and deliver the climate action plan, with membership from academia, climate advocacy groups, city agencies, the private sector, and at least one representative from City Council.

ENGAGEMENT AND EDUCATION

OF CASE STUDY CITIES WITH:

Citizens' juries

Youth boards for climate action

Engagement and education are crucial to climate action planning. Done well, they can help a city establish implementation partners, ensure uptake of climate action programmes, and create impetus for council approval of climate plans. Many cities attribute their success in climate action to engagement and education. Others have found that inadequate engagement and education pose a challenge to moving climate action forward.

Cities' climate plans and efforts cannot be delivered or funded without support and participation from their residents and businesses. They need to be brought on board to understand the city's role in climate action, as well as the importance and benefits of their own participation and investments.

Raising awareness: Educating citizens about climate change and the role of cities in responding to it lays the groundwork for climate action. Several cities have leveraged awareness brought about from climate disasters to help illustrate the imperative for climate action. This has been the case for coastal cities directly threatened by sea level rise. For example, Hull and Somerset saw increased support for their climate efforts from citizens, Council, and local businesses after facing damages from flooding.

Citizens' juries: Some case study cities, including Leeds, Newcastle, and Oxford, are bringing local voices to the table through the establishment of citizens' juries or assemblies composed of randomly selected residents who are asked to advise on the cities' climate actions, decisions, and targets. Assembly members are provided with information on the issues at hand by an advisory group, including local experts, politicians, and business representatives. Presentations are also live streamed on social media and posted online to allow for wider reach to citizens and interested parties. In addition, cities have obtained youth input on action plan development and implementation via youth summits (Leeds) and youth boards (Oxford, Bristol, Manchester).

Multi-stakeholder task forces: Another strategy for ensuring engagement and participation in climate action planning is the use of multi-stakeholder task forces. Several case study cities, including Birmingham, Leeds, Bristol, Manchester, Glasgow, and Oxford, have used task forces, which bring together members of the public, industry, community groups, Council members, and other stakeholders, to oversee the design and, in some cases, the implementation of their climate action plans (for more information about how task forces contribute to governance,

see Climate Action Governance and Resources, page 21). Many cities credit their ambitious plans and success to date to these multi-stakeholder bodies. These groups can improve citizen engagement, increase public support for climate action, highlight challenges and opportunities for climate action, enable cities to tap into local expertise, and help cities identify community members and organisations that can help implement climate actions.

Bristol's Green Capital Partnership, for example, brings together more than 900 organisations, ranging from businesses to churches to environmental organisations, to provide input into the city's policies, collaborate on sustainability initiatives, and engage the public. The largest organisation of its kind in the world, the group has played a key role in getting citizen buy-in for ambitious goals and initiatives to date, which enabled the city to secure the title of 2015 European Green Capital.

Birmingham's Route to Zero Task Force is another example of a multi-stakeholder group. It consists of public and private stakeholders, as well as a Council member, and has increased public buy-in for the City's climate work. In Manchester, the City's Climate Change Partnership, which brings city councillors together with representatives of key sectors and organisations across the city, leverages its members' wide-reaching networks for public engagement.

Focus on equity: Engagement can help to ensure local buy-in to cities' climate plans not only by establishing advisory groups and soliciting residents' feedback, as discussed above, but also by directly including citizens in the low-carbon transition. For example, Glasgow and Hull are working with local schools, colleges, and training providers on the development and uptake of courses and vocational training that will help lead residents into 'green economy' jobs. Additionally, Glasgow is helping industry groups develop retraining programmes for technicians in carbon-intensive industries to transition their skills to support low-carbon alternatives. The City's efforts include helping to establish training programmes for boiler technicians to install and maintain heat pumps, and for car mechanics to learn to work with electric or fuel cell technologies. Glasgow's aim is to ensure that residents are not left behind in the low-carbon economic transition.

An important consideration for engagement not addressed in this study is that of bringing in the voices of under-represented and marginalised groups. Often not included at the table in discussions on climate action, nor considered in the development or implementation of solutions, representatives from marginalised groups should be included in task forces, juries, and engagement efforts. While some cities are beginning to make conscious efforts in this regard, much work remains to be done to ensure equitable outcomes alongside climate action, including a best practice study similar to this one that is solely focused on equity-based climate action planning.

Recommendations for Education and Engagement

- Educate and inform citizens about the importance of climate action efforts, what the city is doing, and how they can help.
- Establish citizens' assemblies or juries composed of residents randomly selected from the public to advise on appropriate actions and targets for the City.
- Be transparent in community climate action planning engagement efforts, for example, by livestreaming citizens' assemblies.
- Establish or work with youth boards and summits to engage young people on city climate action.
- Establish multi-stakeholder task forces, with representation from council, city departments, and a variety of community groups (businesses, academia, environmental groups, etc.), to oversee climate action planning and implementation. Ensure that representatives from marginalised populations are also included in this group and other engagement efforts.
- Develop education and retraining programmes to transition workers to low-carbon industries.

CLIMATE ACTION NETWORKS

OF CASE STUDY CITIES WITH:

Climate action network participation

Membership in city climate action networks helps to accelerate local climate action, filling in gaps where support and expertise from upper levels of government may be lacking. Participating cities benefit by testing new and innovative GHG emissions reductions approaches, sharing tips for implementation efforts, boosting their local and international profiles, encouraging one another to increase their levels of ambition, and more. In addition, these benefits often come at little to no cost for participation.

Many of the cities studied are currently taking part in climate action networks that are supporting them with plan development, target setting, progress monitoring, identification of climate action resources, networking, and more. The City of Manchester has taken this a step

further by establishing a programme to share and replicate its Climate Emergency Framework and the bottom-up governance structure supporting it with other cities across the EU.

Below is a list of some networks in which the case study cities are participating.

UK Networks:

- Core Cities www.corecities.com
- UK100 www.uk100.org

European and Global Networks:

- Energy Cities www.energy-cities.eu/International
- Global Covenant of Mayors www.globalcovenantofmayors.org
- C40 www.c40.org/
- Carbon Neutral Cities Alliance carbonneutralcities.org/
- ICLEI www.iclei.org/

Recommendations for Climate Action Network Participation

- Sign on to global commitments on city climate action and participate in climate action networks.
- Seek opportunities to support other cities through sharing and replicating successful practices.

CLIMATE ACTION IMPLEMENTATION

Cities' actions on climate change will depend on their specific emissions profiles, as well as their size, geography, economy, and other factors. However, many of their agendas are similar, with emissions reductions actions centering around:

- **increasing the efficiency of existing buildings,**
- **requiring net-zero new construction,**
- **electrifying heating and vehicles,**
- **ramping up renewable energy production, and**
- **expanding transit and active transportation infrastructure.**

The following recommendations focus on effective strategies for developing bold and comprehensive climate action plans, rather than the specific actions themselves. For more

details on ambitious or innovative climate action agenda items see the Case Studies section.

Many cities' most successful actions and plans are those that jointly address the climate emergency alongside other needs or issues. The use of building retrofit programmes to help alleviate energy poverty is one priority for many cities. Another example is the expansion of safe active transport infrastructure and the establishment of zero- or low-emissions vehicle Clean Air Zones to support improved air quality and health. In order to advance air quality improvements alongside equity, the City of Glasgow is further considering providing its citizens with free public transit.

Several cities are tackling decarbonisation by taking back the reins on energy generation, through ownership, bulk purchasing and subsidies for renewable energy generation systems, and regional collaboration. For example, the City of Hull houses a wind turbine plant and two waste-to-energy centres. The City of London is supporting local solar photovoltaic uptake by bulk purchasing panels and making them available to citizens at reduced rates through its Energy for Londoners programme. Finally, the City of Birmingham is working on decarbonising building heating by collaborating with five other cities and the national government to develop a city-level Heat Decarbonisation Delivery Plan.

Recommendations for Climate Action Implementation

- Prioritise actions that align with other city priorities, such as health and poverty reduction.
- Develop locally owned renewable energy generation systems and distributions networks.

CLIMATE ADVOCACY

OF CASE STUDY CITIES WITH:

Council motion to advocate for federal climate action

Recognising that they can't get the work done on their own and, in many cases, that they don't have the authority to do so, cities will need to work with national and regional levels of government in order to advance the Paris Agreement targets.

One of the top challenges noted by the cities studied was the need for support from higher levels of government. One city stated that their big takeaway from their climate action so far was to prioritise advocacy with upper levels of government at an earlier stage and to a greater degree. The primary ask noted by most cities was for more funding for UK-wide emissions reductions strategies and infrastructure, as well as for cities themselves to deliver tailor-made

projects specific to their context and needs. Cities also noted that funding delivery from higher levels of government needed restructuring. For example, transportation funding has been traditionally provided based on the anticipated growth of vehicles using local roads, which effectively penalises cities for improving active transportation and transit use rates. Cities also asked for devolution of centralised decision-making to allow for autonomy in governance to expedite the delivery of city-specific investments and solutions.

Recommendations for Climate Advocacy

- Commence work on advocating for national action, collaboration, and funding as early as possible.
- Collaborate with other cities to develop coordinated asks of upper levels of government.
- Adopt a council motion to advocate for climate action at the federal level.


DON PASQUALE
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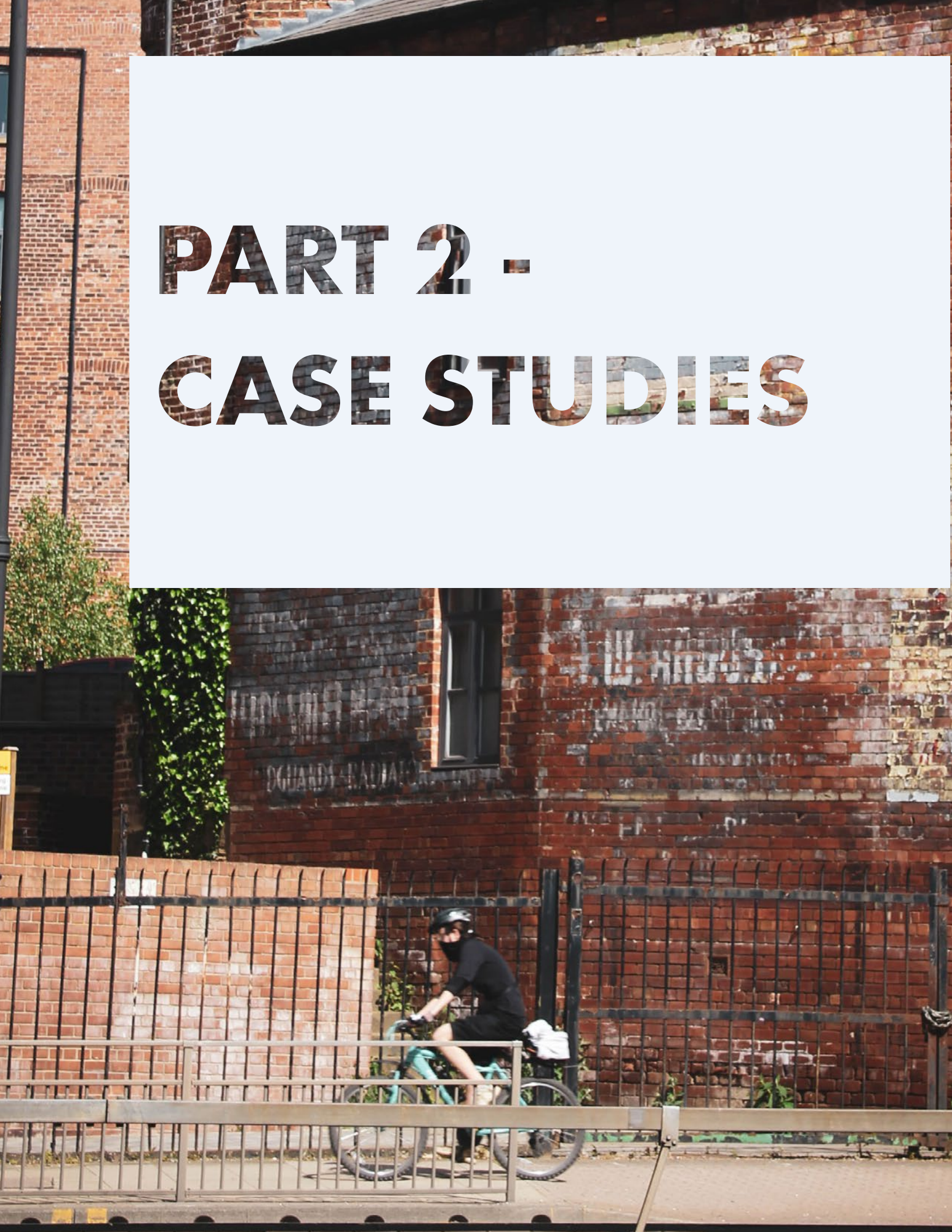

PART 2 - CASE STUDIES

GUIDE TO THE CASE STUDIES

Each city case study is broken down into the following sections:

Key Insights highlights best practices and lessons learnt.

Climate Successes summarises the city's uniquely bold, ambitious, or successful climate actions.

Climate Challenges discusses major challenges to progress on climate action.

Note: The case studies in this section were informed by interviews conducted with city councillors and/or sustainability managers, save for Bristol, which is based off desk research. All cities provided revisions and edits to their case study, save for Bristol and London.

BIRMINGHAM

Population	1.1 million
Per capita emissions	3.7 tC02e
Climate target	0x2030
2017 emissions	4.2 MtCO2e
Climate emergency declaration	June 2019
Climate lens for council decisions	Yes
Networks	GCOM, Core Cities, UK100, ICLEI

Key Insights

- Climate action needs to be embedded into all Council decision-making.
- Birmingham's multi-stakeholder task force is critical to the success of its community-wide plan.
- Detailed GHG emissions modelling is driving the creation of Birmingham's action plan.
- Most successful climate action to date has been in areas with major co-benefits, like public health, exemplified best in Birmingham's central Clean Air Zone due to be implemented in 2021. The City is planning to build on this success by restricting access to the city centre by car and removing through traffic.
- Ensuring a just transition in climate action planning is a priority due to high levels of deprivation and fuel poverty.

- Public education is needed to ensure residents understand what actions will have emission impacts, and the size of those impacts.
- Significant additional financial resources will be needed to undertake climate actions, such as large-scale residential retrofits.
- Advocacy will be required to ensure that the proposed national new building energy efficiency and emissions standard does not make it impossible for Birmingham to implement more stringent standards.

Climate Successes

In June 2019, Birmingham's City Cabinet added a priority to its Council Plan that embeds climate action into the Council's decision-making process, ensuring that all service areas contribute to the Route to Zero (R20) journey. As a result, City resources dedicated to tackling climate change have been ramping up within its core sustainability unit and across others. The City also established a highly successful R20 Task Force that consists of public and private stakeholders, as well as a Council member, and has increased public buy-in for Birmingham's climate work.

Despite the fact that Birmingham is in the midst of its climate action planning process, the City has already achieved some big wins, including taking a lead role nationally in setting out bold proposals in its draft Birmingham Transport Plan (BTP). The plan lays out a vision for redefining a city once proudly known as the "UK's motor city" into one with a sustainable, green, inclusive, go-anywhere transport network. It seeks to reduce transport GHG emissions by reallocating road space and dividing the city centre up into six segments. Each area will only be accessible by car from the ring road with no movement between these areas except by public transport, foot, or bike. The City will also reduce parking spots in the city centre. The City's aim is to reduce automobile trips (as exemplified by other European cities like Ghent in Belgium) and promote active travel. The plan would support the expansion of the metro and bus rapid transit network.

The City of Birmingham is proud of its proposal for a Clean Air Zone where gasoline and diesel cars are required to meet strict GHG emissions standards set by the EU, or face a fine. This programme has been delayed as a result of COVID-19 and is now set to go live in 2021. These standards are primarily directed at reducing nitrous oxide GHG emissions for public health, but will also have some important GHG emission reduction impacts. The Clean Air Zone will help get less efficient cars off the road and will begin to shift the travel choices and behaviour of residents, encouraging alternative modes of transportation in the city centre. Any revenues generated from the Clean Air Zone will be used solely for local low-carbon transportation solutions, like the City's transit system. The City is hoping to use the momentum, energy, and insight gained from this project to broaden the agenda on vehicle GHG emissions in the City. The City's Climate Task Force will help determine how this programme might evolve to further the City's Route to Zero.

Another success for the City is the Birmingham District Energy Scheme, a partnership with Birmingham City Council, Aston University, Birmingham Children's Hospital and ENGIE under the name of Birmingham District Energy Company (BDEC). BDEC supplies low-carbon, low-cost energy to major energy consumers across the city centre. Birmingham is also collaborating

with five other cities and the national government to develop a bespoke city-level Heat Decarbonisation Delivery Plan. Additionally, Tyseley Energy Park is an innovative partnership between the City, the University of Birmingham, and wire manufacturers Webster and Horsfall. The park is showcasing how novel energy technologies can power industry from low-carbon sources, including waste, energy storage, and clean transport fuels.

Climate Challenges

On the buildings side, the City faces challenges in dealing with energy poverty and a natural gas-heated building stock, and in improving performance of new builds. Efforts have been made by the City to implement more stringent building standards, but, to date, these efforts have all been watered down at the point of community consultation, and much of the work to improve building efficiencies currently comes down to developers' willingness to act. When it comes to reducing the carbon footprint of its buildings, the City also faces a knowledge gap. In order to address this gap, the City is undertaking a Passivhaus (zero-carbon house) pilot on a site to be delivered by Birmingham Municipal Housing trust (BMHT) for social housing and developing an action plan for retrofitting homes. Because this effort will likely require significant support from higher levels of government, Birmingham is working in partnership with other local governments to develop a collective ask for more support.

One of the City's key challenges is managing public understanding of the climate issue. For example, how do you explain the different targets for climate action at different levels of government? And, perhaps most importantly, how do you get citizens to change their behaviour, in small and big ways? This involves lots of public education and community engagement to ensure residents understand what actions will have emission impacts, and the size of those impacts.

The scale of the challenge and the significant costs associated with some of the actions mean that Birmingham cannot deliver R20 without significant additional financial resources, such as for residential retrofits and potentially legislative changes. For example, the national government is proposing a national standard for new building energy efficiency and GHG emissions. This may make it impossible for Birmingham to implement more stringent standards.

A further challenge is ensuring Birmingham can deliver on its net-zero ambition while protecting its communities and reducing inequalities that already exist in the city.

Additional Resources

Draft Birmingham Transport Plan
Birmingham District Energy Scheme
What is the Climate Emergency?

Contact

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BRISTOL

Population	460,000
Per capita emissions	3.5 tC02e
Climate target	0x2030
2017 emissions	1.6 MtCO2e
Climate emergency declaration	November 2018
Networks	GCOM, Core Cities, Energy Cities, ICLEI, Global Resilient Cities

Key Insights

- Community organisations have driven the city's climate action to date and have been willing to take action, for example, by committing to match the City targets.
- Open, transparent, multi-stakeholder governance has been key to developing and overseeing the city's climate action.
- Bristol includes consumption and aviation GHG emissions in their inventory, which creates issues with data and jurisdiction.
- Some climate actions may run counter to local industry, like tourism and aerospace engineering, and Bristol's goal 'to be a leading international economy.'
- Funding climate action that tackles the growing transport GHG emissions is a major challenge.

Climate Successes

Dubbed the UK's 'greenest city',[17] Bristol has been tackling climate change for two decades, pouring hundreds of millions of pounds into climate action, and setting and exceeding ambitious targets.

Bristolians began pushing for Bristol to become the greenest city in Europe in the early 2000s—a vision that was seized by the City and led to efforts that secured the title of 2015 European Green Capital for Bristol.[18] Since then, the City has continued to dedicate significant resources to making climate action and sustainability a core part of all its work, and encouraged other groups across Bristol to do the same. In November 2018, it became the first local authority in the UK to declare a climate emergency and, in July 2019, the City formally adopted a goal of becoming carbon neutral by 2030 in terms of both production and consumption emissions. These actions were bolstered by widespread public support and community action.

The City's Environmental Sustainability Board is co-chaired by the Mayor and oversees the planning and delivery of Bristol's Climate Strategy. The Board aims to mobilise resources towards and align a range of stakeholders, including businesses and other organisations, with the City's climate goals.[19] The board receives independent advice from a panel of climate change experts on the Bristol Advisory Committee on Climate Change (BACCC). BACCC, which is modelled on the UK's national Committee on Climate Change, was established by the University of Bristol and the University of the West of England at the request of the Mayor.

Bristol's innovative approach to community engagement is a core aspect of its climate strategy and has succeeded in mobilising resources to support sustainability across a range of organisations and people. In 2019, the Mayor allocated £100,000 towards public engagement alone.[20] Additionally, the Bristol Green Capital Partnership brings together more than 900 organisations, ranging from businesses to churches to environmental organisations, and is the largest organisation of its kind in the world.

Climate Challenges

Moving forward, Bristol faces several challenges related to tackling climate change. First, the City Council does not have the power to push forward critical actions to reduce GHG emissions at the scale and speed needed to accomplish the City's objectives. Attaining them requires significant action by the national government. The Mayor is working with other British cities to call on the

17 Bairstow, J. (2019, December 12). Bristol takes the top spot as 'UK's greenest city'. *Energy Live News*. Retrieved from https://www.energylivenews.com/2019/12/12/bristol-takes-the-top-spot-as-uks-greenest-city/.

18 Brownlee, E. (n.d.). History. Bristol Green Capital Partnership. Retrieved June 12, 2020, from https://bristolgreencapital.org/history/.

19 The Environmental Sustainability Board. Bristol One City. Retrieved June 13, 2020, from https://www.bristolonecity.com/environment/the-environment-board/; Cousins, A. (2019, October 8). New ways of working to tackle environmental sustainability in Bristol. Bristol One City. Retrieved from https://www.bristolonecity.com/new-ways-of-working-to-tackle-environmental-sustainability-in-bristol/.

20 Bristol City Council. (2019, July 16). *Climate Emergency - The Mayor's Response*. Retrieved from https://democracy.bristol.gov.uk/documents/s34127/ClimateEmergency-The%20Mayors%20Response.pdf.

national government to take the required actions.[21]

Substantial funds must be mobilised and redirected to support actions to meet Bristol's climate target. The City estimates that £154 million per year needs to be invested by or on behalf of Bristol citizens and businesses to achieve the UK's national target, which falls short of Bristol's goal of carbon neutrality by 2030; achieving Bristol's target would require an even larger investment. There is, however, a strong business case. A study by the University of Bristol and the University of Leeds indicates that there is an opportunity to take cost-effective measures to reduce GHG emissions that would generate financial savings and thousands of jobs.[22]

Aspects of Bristol's current economic goals may run counter to its climate goals. For example, its One City Plan notes 'the challenge of aviation GHG emissions associated with [Bristol's] desire

to be a leading international economy.'[23] In addition, some of the city's key economic sectors, such as aerospace and advanced engineering, are currently tied to significant GHG emissions. Transport trends also pose a challenge. Currently, miles driven in Bristol are rising faster than the fuel efficiency of vehicles.[24]

The City has set an ambitious goal of becoming carbon neutral with respect to production and consumption GHG emissions by 2030 (scope 1, 2, and 3 GHG emissions). Attaining this target involves reducing a broad variety of GHG emissions that are outside the direct control of the City Council and Bristolians more generally. The City also lacks granular data on indirect GHG emissions (current numbers are estimates based on national data), which they will need to establish to better track on that goal.[25]

Additional Resources

Bristol's Environmental Sustainability Board
Bristol's One City Climate Strategy
Bristol Green Capital Partnership
Bristol Advisory Committee on Climate Change (BACCC)

21 Bristol City Council. (2019, July 16). *Climate Emergency - The Mayor's Response*. Retrieved from https://democracy.bristol.gov.uk/documents/s34127/ClimateEmergency-The%20Mayors%20Response.pdf.

22 Bristol City Council. (2019, July 16). *Climate Emergency - The Mayor's Response*. Retrieved from https://democracy.bristol.gov.uk/documents/s34127/ClimateEmergency-The%20Mayors%20Response.pdf.

23 One City Plan 2020. (2020). Retrieved https://www.bristolonecity.com/wp-content/uploads/2020/01/One-City-Plan-text-only-version.pdf.

24 Bristol City Council. (2019, July 16). *Climate Emergency - The Mayor's Response*. Retrieved from https://democracy.bristol.gov.uk/documents/s34127/ClimateEmergency-The%20Mayors%20Response.pdf.

25 Bristol City Council. (2019, July 16). *Climate Emergency - The Mayor's Response*. Retrieved from https://democracy.bristol.gov.uk/documents/s34127/ClimateEmergency-The%20Mayors%20Response.pdf.

CARDIFF

Population	360,000
Per capita emissions	4.1 tC02e
Climate target	0x2030
2017 emissions	1.5 MtCO2e
Climate emergency declaration	March 2019
Networks	Core Cities, GCOM

Key Insights

- National and sub-national targets, local political will, and national pressure groups have helped inspire Cardiff's carbon actions.
- Developing local renewable energy projects and reducing transport emissions is a critical part of Cardiff's plan to achieve their GHG reduction target.
- Progress on reducing transport GHG emissions has been fuelled by the public desire for improved air quality.
- Council is examining how it can use its COVID-19 recovery plan to prioritise climate actions that contribute to social equity and economic recovery.

Climate Successes

Cardiff has laid out an ambitious vision for the future and met its previous climate action goals. The City's 2013 Carbon Reduction Strategy sought to reduce the Council's direct GHG emissions by 26% by 2020. By 2017, they had already dropped by 34%. TThis has more recently been supported by ambitious policies and targets set by the Welsh government for net-zero emissions by 2050 and carbon neutrality in the public sector by 2030.[26] This builds on Wales' Well-being of Future Generations Act (2015) which requires that public bodies, including local authorities, consider the sustainability and long-term consequences of policy decisions.[27]

In March 2019, Cardiff declared a climate emergency, which includes a commitment to achieve carbon neutrality by 2030. The City has also passed a motion to divest its pension from fossil fuel companies.

In January 2020, Cardiff's Council announced a £21-million package of measures, funded by the Welsh government, to improve air quality (the City has some localised hot spots which are among the worst in the UK), in addition to reducing GHG emissions from transport. Strategies include retrofitting buses, transitioning the Council's fleet to low/zero-emission vehicles, measures to reduce GHG emissions from taxis, and expanding walking and cycling infrastructure.[28]

Cardiff has also committed to developing local renewable energy, including a £13.9-million investment in clean and sustainable energy generation in their 2019/20 budget. The City's major energy projects include: the Radyr Weir hydroelectric scheme, the recently completed Lamby Way solar farm, and the proposed district heating network scheme serving areas of Cardiff Bay and the City Centre. The City has also supported energy efficiency retrofits in over 2,000 residential properties and has an ambitious programme to develop over 2,000 new-build houses, many of which will be Council rented and all of which will exceed national standards for energy efficiency.

Cardiff is also working on rolling out smart technology to improve energy efficiency. In 2019, the City installed smart LED street lights across residential areas that will save the Council almost half-a-million pounds in energy costs and reduce carbon dioxide GHG emissions by 836 tonnes annually. They are also working with the British Geological Survey to determine how to use geo-exchange energy systems to heat buildings, exploring the use of portable solar PV, and supporting innovations in using hydrogen for energy.

In addition, the City is focused on identifying synergies across different areas so that it can create innovative policies to tackle other challenges alongside climate action. For example, Cardiff's food strategy looks to address emissions from producing, processing, and transporting food, alongside poverty and health.[29]

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26 Welsh Government (2019, March). *Prosperity for All: A Low Carbon Wales*. Retrieved from https://gov.wales/sites/default/files/publications/2019-06/low-carbon-delivery-plan_1.pdf.

27 Welsh Government (2015). *Well-being of Future Generations (Wales) Act 2015*. Retrieved from: https://futuregenerations.wales/wp-content/uploads/2017/02/150623-guide-to-the-fg-act-en.pdf.

28 £21m for air quality improvements in Cardiff after Minister approves final plan. (2020, January 29). Retrieved June 12, 2020, from https://www.cardiffnewsroom.co.uk/releases/c25/23133.html.

29 Cardiff Council. 2019, November 21. "Food Strategy." Retrieved from: https://cardiff.moderngov.co.uk/mgAi.aspx?ID=14929#mgDocuments

Climate Challenges

As a low-lying coastal city, Cardiff is particularly vulnerable to climate change: most of the city could be flooded in 80 years.[30] A series of mitigating actions is in place or in development to tackle this problem.

Cardiff's climate action strategy faces a few key challenges. First, Cardiff is considering how it can develop a clear and robust system for measuring and monitoring its climate action efforts. While the Council has a system for tracking some types of emissions, such as transportation energy and buildings emissions, it has no system for others, such as the consequences of its procurements. Tracking indirect and scope 3 emissions is a particular challenge and one that is being directly addressed in the City's refreshed One Planet Cardiff Strategy.

Second, financial limitations, which have been exacerbated by the pandemic, pose challenges for Cardiff's targets. In transport alone, Council identified the need for a £2-billion investment in measures to sufficiently reduce GHG emissions.[31] The City has seen significant cuts in finances over the past decade, driven in great part by budget cuts at the national level. For example, the budget of some internal departments has been reduced by 40% over the last decade. Consequently, the bulk of Cardiff's climate efforts have been funded by grants and interest-free loans, or developed on an 'invest-to-save' basis. Cardiff has also received financial and technical support from the Welsh Government for renewable energy and energy efficiency projects.

In addition, according to Cardiff Council's current policies, capital projects must pay for themselves in the long run in order to be approved. While the Council approves projects that may take decades to generate income, those that will not cannot be considered. This poses limitations for climate actions that do not bring financial returns, and the Council is reconsidering this approach by starting to consider lifetime social, financial, and economic costs more holistically.

Finally, Cardiff's most significant efforts to reduce GHG emissions have focused on the transport sector, which is Cardiff's biggest source of GHG emissions. Significant funding has been sourced to support the massive investments highlighted in their ambitious 2020 White Paper Transportation Plan, though more is needed. In addition, Cardiff has yet to release a thorough citywide strategy for tackling other major sources of GHG emissions, such as electricity generation, industry, and buildings. The Council's own internal investments and partnerships in renewable energy are a step in the right direction, but a much more significant investment is needed to wean the city as a whole off fossil fuels. The Council is currently working to address these challenges. In October 2020, Cardiff Council's Cabinet approved the One Planet Cardiff Strategy, which sets out a vision for how Cardiff can achieve carbon neutrality in the Council's operations and galvanise partnership action to develop a citywide strategy to reach carbon neutrality by 2030. It plans to release a citywide action plan in 2021.

Additional Resources

One Planet Cardiff
Cardiff's Food Strategy
Transportation White Paper

Contact

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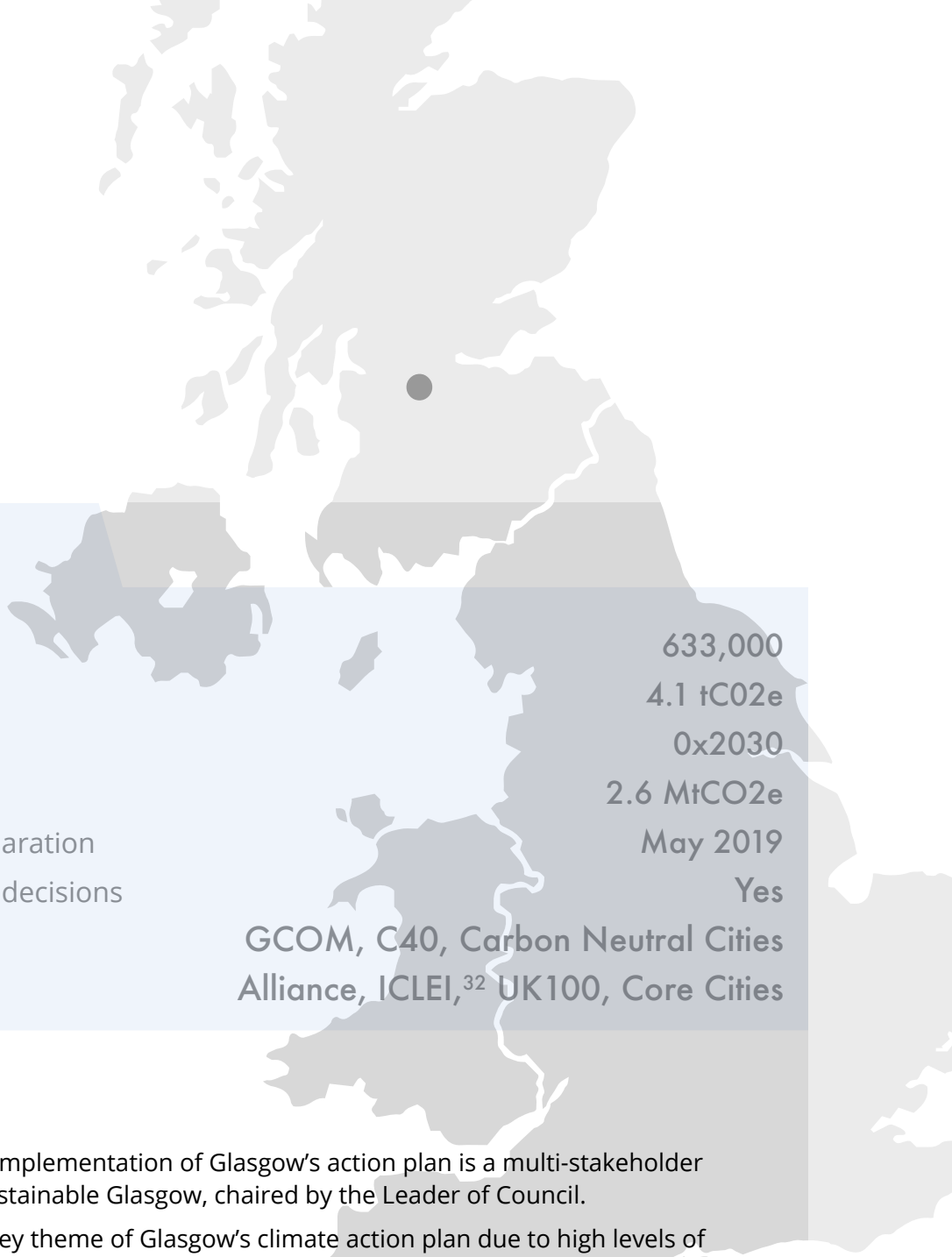

GLASGOW

Population	633,000
Per capita emissions	4.1 tC02e
Climate target	0x2030
2017 emissions	2.6 MtCO2e
Climate emergency declaration	May 2019
Climate lens for council decisions	Yes
Networks	GCOM, C40, Carbon Neutral Cities Alliance, ICLEI,[32] UK100, Core Cities

Key Insights

- Critical to successful implementation of Glasgow's action plan is a multi-stakeholder partnership called Sustainable Glasgow, chaired by the Leader of Council.
- A just transition is a key theme of Glasgow's climate action plan due to high levels of energy poverty in the city. This is exemplified in Glasgow's Affordable Warmth Programme. The City wants to see climate justice at the heart of planning, locally and globally, for a cleaner, greener economy as we look to recover from COVID-19.
- Co-benefits like air quality and resilience to flooding have driven its climate action to date.
- The City is planning to support the creation of local green jobs by working with local schools to increase participation in the sector and by supporting retraining programmes for existing home, building, and car technicians.
- Glasgow's climate work has been bolstered by active participation in international climate action organisations, including the Covenant of Mayors and C40, and being host of the 26th United Nations Conference of the Parties.

32 Cities for Nature & Urban Transitions Alliance.

- The City is considering innovative climate action financing tools, such as prudential borrowing and municipal bonds.
- The cost of the transition will be significant and additional funding from higher levels of government will be required.
- The City's Climate Emergency Working Group includes representatives from all political parties.
- Glasgow is also establishing a renewable energy target, which will be supported by a study of its renewable energy potential focused on geothermal and hydropower, as well as water-source heat pumps in its river.

Climate Successes

Glasgow declared a climate emergency in May 2019 and has a target of net-zero emissions by 2030. The City is the official host of COP 26 and is excited to use the opportunity to showcase its innovative climate action.

Council members that have been outspoken on climate action have been critical of the City's progress in tackling its emissions. These council members helped push through the City's extensive network of separated bike lanes, and are now driving the implementation of its Climate Emergency Report recommendations.

As a part of its efforts to tackle climate change, the City has established two public-private groups: Sustainable Glasgow and the Climate Emergency Working Group. Sustainable Glasgow is a public-private, multi-sector group formed in 2010. Chaired by the Leader of Council, it brings together diverse companies, organisations, and institutions to collaborate with Council on efforts to decarbonise the city. In addition, Glasgow's Climate Emergency Working Group, which includes representatives from all political parties, the Glasgow Chamber of Commerce, and members of activist groups like Extinction Rebellion, is working on developing a plan to help Glasgow meet its ambitious target of becoming carbon neutral by 2030.

Alongside its emissions reduction target, the City has committed to establishing a renewable energy target. The City is focused on opportunities for generation from geothermal power and hydropower, and water-source heat pumps in the River Clyde. It has worked with the British Geological Survey to map out the sub-surface of the city, which has the potential to supply 40% of the city's heat from abandoned mine workings alone, but will require a major capital investment (over £100 million). The Council is also working with Community Energy Glasgow to develop local renewable energy systems that are community owned. In addition, the City's existing Solar Schools programme places solar panels on school roofs.

One of the City's key programmes to tackle its second largest source of GHG emissions—its older, inefficient, natural gas-heated building stock—is its Affordable Warmth Programme. This programme provides energy efficiency retrofits and heat to social housing for no or low cost, helping residents save £40-60 on their monthly utility bills. The programme also aims to provide residents with lower-carbon heating supply through its district energy infrastructure for high-rise flats (which is to be converted from natural gas to biogas) and via heat pumps where there is insufficient density.

The City is planning to support the creation of good local jobs by working with local schools to increase the number of students pursuing science, technology, engineering, and maths education, and into vocational training in local colleges. It is also planning to help industry groups develop retraining programmes for existing home, building, and car technicians to work with low- or zero-carbon technologies.

In tackling cars and trucks, Glasgow's largest emitters, the City has been able to combine its public health interest in improved air quality with its carbon reduction goals. For example, Glasgow has recently established a low-emissions zone in its city centre which it hopes to transition into a zero GHG emissions zone. The long-term goal of the City is to discourage the use of personal vehicles while encouraging walking, cycling, and transit. The City has improved its cycling network in recent years with separated lanes and with improved lighting to address public safety complaints. In response to the challenge of COVID-19, the City has significantly expanded cycling and walking infrastructure as part of its Spaces for People programme. The City is also considering providing free transit, as other cities in Europe have already shown to be possible and effective. This would have the additional benefit of reducing financial stress for low-income residents.

Climate Challenges

The City does not want to leave any of its residents behind in this economic transition, as happened when industry and manufacturing left Glasgow. Much of its population is struggling financially. These residents are also the ones most vulnerable to the negative impacts of fossil fuel combustion, like poor air quality and flooding. For these and other reasons, the City is prioritising equity in its path to decarbonisation.

Achieving carbon neutrality by 2030 will require a certain amount of technological innovation, but what is arguably most important from the City of Glasgow's perspective is the innovation required in governance and politics. The City must tackle major questions about whether public services run by private operators, like transit and utilities, are being run to the standards they aspire to. If the answer is no, the issue of remunicipalisation is one of many options the City will need to consider.

The cost of the transition will be significant. The City is considering some innovative financing tools, such as prudential borrowing and municipal bonds; however, additional funding from higher levels of government will undoubtedly be required.

Additional Resources

Glasgow Climate Emergency Working Group - Report and Recommendations
Energy Management
Carbon Neutral Glasgow Article
Climate Ready Clyde
Local Air Quality Management
City Development Plan
Affordable Warmth Programme

Contact

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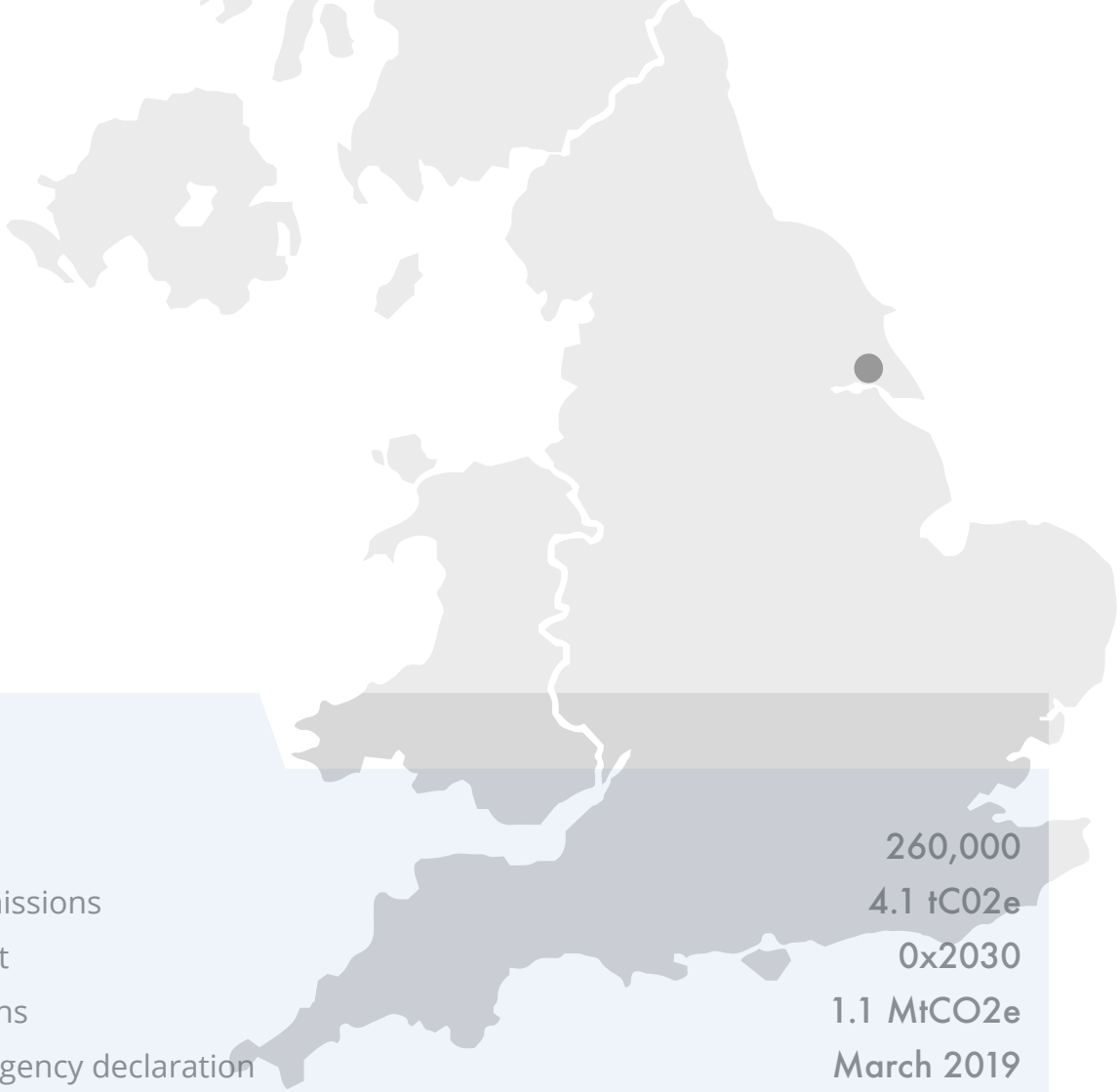

HULL

Population	260,000
Per capita emissions	4.1 tC02e
Climate target	0x2030
2017 emissions	1.1 MtCO2e
Climate emergency declaration	March 2019

Key Insights

- The City is accounting for both production and consumption GHG emissions in its inventories, which is a more comprehensive approach to emissions accounting than typical practice.
- Hull was partly driven to increase its climate action because of its vulnerability to sea level rise and the experience of recent flood events.
- Focusing on co-benefits, such as resiliency, public health, economic development, and equity, has been key to driving climate action in Hull.
- The City made a concerted effort to attract renewable energy manufacturing to drive the local economy towards low-carbon transition.
- The City is working with local colleges and training providers to develop the skills to support the low-carbon transition.
- The City is working with other cities and the natural gas distributor to plan for hydrogen heating to decarbonise domestic heat alongside electrification solutions.

- In its climate communications, the City focuses on positive aspects of the transition in relation to public health, community well being, the economy, and the environment.
- Funding for large scale decarbonisation of domestic heating is a major challenge.

Climate Successes

In March 2019, Hull declared a climate emergency and committed to becoming carbon neutral by 2030, in terms of both production and consumption GHG emissions. Since declaring its climate emergency, the City has been developing the capacity and size of its climate change team.

The 2007 floods galvanised existing action on climate change and increased the community's understanding of the impact of extreme weather events and the drive towards increased resilience and mitigation efforts. As a result, Hull has developed aqua greens—green spaces that provide public recreation areas, in addition to storing and slowing the flow of rainfall—in City parks, and supported efforts to improve their carbon sequestration potential and enhance biodiversity.

The City has had success in retrofitting its older inefficient housing stock, for example, through the use of external insulation blocks for older brick homes (typical of the region), which have no space to inject insulation.

The City is working with local colleges to adapt curricula, especially in regards to electrical and mechanical engineering, to prepare the workforce with skills and training for the green economy.

The City plans to transition its fleet to electricity by 2030 and is exploring mobility-as-a-service business models to provide services for staff and city centre residents who do not need access to a car all of the time. The latter will be linked to an expansion in charging infrastructure and increasing sustainable travel choices through extensive cycling infrastructure.

In recent years the City's energy sector has been growing with the establishment of the Siemen Gamesa offshore wind turbine manufacturing plant and deployment facilities for the North Sea wind farms, an energy-from-waste facility, the installation of solar panels on commercial roofs throughout the city, and the construction of a digital innovation centre. As local industry is a significant source of emissions, Hull has identified opportunities for increased waste heat recovery, carbon capture, resource efficiency, and heat decarbonisation for the sector.

Climate Challenges

Hull is particularly vulnerable to sea level rise. The Council's climate emergency declaration elaborates:

> *"[...] the current 1˚C of warming could result in 2m of sea level rise by 2100, enough to submerge Hull within the lifetime of today's children. A 2˚C to 4˚C of warming could see sea level rises of 4.7m, to 8.9m."*

Like many cities, Hull faces a challenge with respect to reducing transport emissions and increasing modal shift to more sustainable means of travel. The national government is providing some funding for electric buses and infrastructure improvements to interegion bus routes (i.e. 'Super Bus Routes').

Most of Hull's building stock suffers from historically poor levels of insulation and energy inefficiency, which will need to be widely addressed to reduce emissions. The City is unsure how it will deliver the decarbonisation of home heating either through electrification or hydrogen, across all housing tenures in particular homeowners. It is also unclear how a move towards large-scale electric heating will affect the local electricity grid. The City is working with other cities and the natural gas distributor to assess the role of hydrogen as a solution to home heating emissions, starting in the early 2030s. The City also needs to understand how heat decarbonisation will affect those on low incomes and how an equitable transition can be delivered. The City is targeting the funding it has, and is able to access, for pilot projects, with the intention to deploy programmes more widely once more resources are available.

Communication is a major challenge and a major opportunity. The City aims to stimulate discussion around the difficult choices ahead and their potential to deliver co-benefits around improved public health, community well-being and economic and environmental benefits.

Additional Resources

Hull 2030 Carbon Neutral Strategy

Contact

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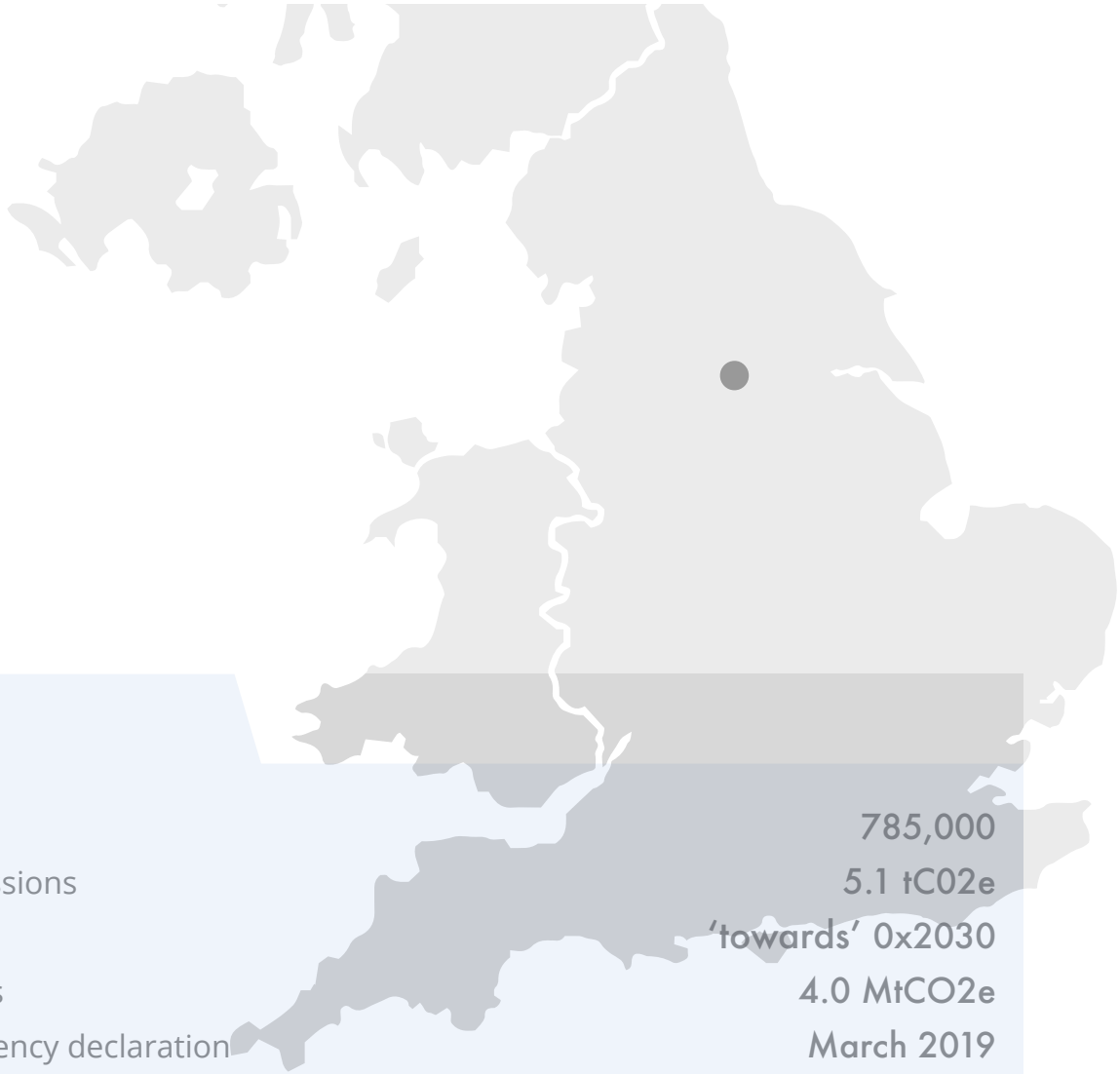

LEEDS

Population	785,000
Per capita emissions	5.1 tC02e
Climate target	'towards' 0x2030
2017 emissions	4.0 MtCO2e
Climate emergency declaration	March 2019
Climate lens for council decisions	Yes
Networks	GCOM, Core Cities, UK100

Key Insights

- A detailed climate emergency declaration has been key to Leeds' successful climate action. The declaration provided direction, delegation, and timelines for the development of plans and actions, as well as assurance of adequate and ongoing implementation.
- Climate action has been embedded into the City's decision making and is managed by a cross-council and City department committee.
- The public is essential to climate action implementation via a multi-stakeholder commission and citizens' jury, which has a special focus on youth engagement.
- Funding solutions are needed to scale Leeds' home energy efficiency and decarbonisation pilot programmes.
- There is a need for the devolution of centralised decision-making at the federal level to allow for autonomy in governance to expedite city-specific investments and solutions.

Climate Successes

A detailed climate emergency declaration has been key to Leeds' successful climate action to date. The declaration provided direction, delegation, and timelines for the development of plans and actions, as well as assurance of adequate and ongoing implementation. The declaration required that all reports to Council detail the climate implications of any decisions and that a report be presented at each Council Meeting outlining progress towards addressing the climate action targets.

Leeds has also taken a comprehensive approach to its resourcing and governance around climate action. The City Council created a seat on its Executive Board that serves to monitor and promote the achievement of the City's climate targets. In addition, the City established a cross-party Climate Emergency Advisory Committee made up of 13 councillors. The Committee has working groups that focus on transport, planning, housing, and biodiversity. At the officer level, the Director of Resources and Housing takes a coordination role for a team of 30 people working specifically on sustainable energy and air quality.[33]

Engagement has been a major focus of Leeds' response to their climate emergency declaration The City created a Climate Commission in partnership with the University of Leeds to support and provide an independent voice on the City's mitigation and adaptations efforts. The commission, which draws its membership from 31 businesses and organisations across Leeds, mimics the one in place at the national level and was the first of its kind in a local government in the UK. It not only helped design the City's plan, but oversees its implementation and reports to Council annually on the plan's progress. Additionally, the City's Citizens' Jury, which consists of 25 people from various backgrounds, represents the public and puts forward climate action recommendations for the City. The City also ran an engagement process that reached 8,000 participants and included over 80 events, including several climate youth summits held at primary and secondary schools. The Commission and Jury have provided input on actions and ensure public support for those that were put forward.

Key climate actions undertaken by the City to date include:

- Commiting to a rationalisation and energy efficiency programme which reduces emissions from council buildings by a further 40% by 2025;
- Purchasing 100% of electricity from green sources, and supporting new renewable capacity;
- Purchasing only low-emission vehicles by 2025;
- Halting payment for staff petrol and diesel cars by 2025;
- An extensive tree planting on City land to offset emissions;
- Adding a climate emergency section to all reports, accompanied by guidance to help report writers to ensure that all potential impacts are considered;
- Developing guidance to ensure that the climate emergency is embedded in every stage of the procurement process; and
- Developing an accredited, Leeds-based Carbon Literacy Project course for staff.

33 City of Leeds. Plans and strategies: Climate Change. 2020. https://www.leeds.gov.uk/your-council/plans-and-strategies/climate-change

As council owns 18% of the City's housing stock, it has also made significant achievements in improving their energy ratings through heating replacement programmes for uptake of district heating and heat pumps, as well as securing funding of £ 10.5 million for insulation improvements and £ 5.4 million for domestic solar and energy storage. The City is considering a Housing Revenue Account capital programme for further efficiency improvements.

The City's other successes have included:

- Leeds PIPES district heating system;
- Area-based regeneration schemes for housing improvements (private and council);
- A waste-to-energy system;
- A commitment to bring 20,000 new homes into an expanded City centre, with many of the new developments being connected to district energy, following complete community principles, and enabled through a regional revolving investment fund; and
- Implementation of a Clean Air Zone, which was well received by the public.

Climate Challenges

The City anticipates that it will be a challenge to get citizens and businesses on board with some of the major investments required for efficiency improvements and decarbonisation of privately owned properties and equipment. Pilot programmes have been funded by the City, but they are unable to fund programme scaling. The City aims to address this in part through crowdfunding, green bonds, and offsetting schemes.

Another challenge is the City's current funding model for low-carbon transportation infrastructure, which is based upon the anticipated growth of vehicles using local roads. The City needs to develop an alternative scheme that relies on a reduced number of vehicles.

There is also a need for the devolution of centralised decision-making at the federal level to allow for autonomy in governance to expedite and enable city-specific investments and solutions. Developments are underway to move in this direction. At the same time, national policy is needed to push forward efforts the City does not have control over, such as decarbonising the 80% of homes currently fueled by gas. Additionally, many of Leeds' homes are from the early 1900s, requiring an estimated £800 million to reach a minimum energy efficiency rating across all stock by 2030.

The need for an industrial strategy that does not disadvantage people in high-carbon industries also presents a challenge. Industrial upgrades, and/or alternative jobs that offer the same payscale to displaced workers are needed.

Additional Resources

Leeds Best Council Plan 2020-2025
Leeds Climate Commission

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LIVERPOOL

Population	490,000
Per capita emissions	3.6 tC02e
Climate target	0x2030
2017 emissions	1.8 MtCO2e
Climate emergency declaration	July 2019
Climate lens for council decisions	Yes
Networks	GCOM, URBAN GreenUP, Core Cities, UK100

Key Insights

- Liverpool has identified climate action as an opportunity for business growth and job creation, reducing energy costs, increasing resilience, improving health, and reducing fuel poverty.
- Liverpool has succeeded in meeting past emissions reduction targets with investments in renewable energy, initiatives to make public infrastructure like street lighting more energy efficient, and a concerted effort to reduce Council, or corporate, emissions.
- Liverpool is paying special attention to the role of green space in climate mitigation via sequestration with a focus on tree planting, planting wildflower meadows, and implementing nature-based urban infrastructure.
- Rather than making climate action the focus of a dedicated department, Liverpool has implemented a governance structure that requires all work areas across the City to consider climate change.

Climate Successes

Liverpool has exceeded the climate targets it has set to date and is on track to achieve a 42% reduction in emissions, relative to 2005 levels, by 2020. The City estimates it has prevented 840,000 tonnes of CO_2 from entering the atmosphere since 2005. It has also planted half-a-million trees over the past 25 years. In addition, Council has made significant strides in reducing emissions tied to its own estate by transitioning to low-carbon energy and fleets. It is looking to offset its remaining emissions in order to inspire local businesses to do the same.

Following its climate emergency declaration in July 2019, the City has also adopted a requirement for all reports going before Cabinet and Select Committees to include details on the environmental impacts of a project and how negative impacts will be mitigated. The City appointed a Cabinet Member for Environment and Sustainability and a Select Committee of 13 city councillors responsible for advancing work on climate change.

The City's climate action efforts are influenced by the Liverpool City Region Combined Authority (LCRCA), which governs a metropolitan region of 1.5 million. The City looks to the regional government, which declared a climate emergency in May 2019, for leadership and support on issues, such as transport and renewable energy development, that span the metropolitan area.

Among other efforts, such as a residential retrofit programme and energy planning requirements for new large developments, Liverpool is working with the LCRCA to explore the feasibility of hydroelectricity in the River Mersey and Liverpool Bay, in addition to investing in wind and solar power. There are five wind farms in Liverpool Bay, generating close to 1 GW of electricity, one of the largest clusters in the world. The City has encouraged local organisations to invest in renewable energy. There are now more than 3,200 renewable energy installations registered in the City, up from 1,700 in 2014, including solar panels at the city's largest venue, the M&S Bank Arena.

Council is also looking into expanding and creating district energy systems, in addition to deploying hydrogen to replace natural gas as a heating source. In 2019, Council began exploring proposals to use heat from the River Mersey and dock waters to heat waterfront properties with the potential to save 10,000 tonnes of CO_2 per year. The City is also nearing completion on a local heat and power network for the 30-acre Paddington Village development. Other buildings in the area are already tapped into a local network, making it one of the largest district energy systems in a British city centre.

Investments in green space are a key component of Liverpool's climate action strategy and have been a focal point for innovation. Liverpool is one of three European cities participating in the URBAN GreenUP project, an initiative exploring how nature-based solutions can mitigate climate change, while improving air quality and water management. In addition, the Liverpool Wildflower Gateways Project, which is run by the Council and National Wildflower Centre, facilitates the planting of wildflowers in meadows and along prominent roads in the city in partnership with community groups and schools. Fifteen hectares of wildflowers grow across Liverpool as a result of the programme.

Liverpool is making strides in advancing sustainable transit. The agenda is driven by concerns about air pollutants, in addition to climate targets. More than 1,000 deaths per year are linked to air pollution in Liverpool, which has some of the highest levels of lung disease in the UK.

A number of schemes are underway to improve pedestrian and cycling infrastructure, including connectivity to the city centre and between areas across the city. In addition, Council is encouraging alternatives to private transport through communications efforts, such as the 'Let's Clear the Air Liverpool' website and the Walking to School campaign. The City is also improving public transit to encourage ridership and reduce emissions. Liverpool's City Centre Connectivity Scheme reorganises bus routes to reduce empty buses and CO_2 emissions. The City is working with Region partners to invest in electric, electric hybrid, biogas, and hydrogen-fuelled buses.

Electric vehicles (EV) are another key area of focus for the City. In addition to taking measures to electrify its fleet and city buses, Council has encouraged the registration of electric taxis and installed 110 charging points for EVs. Liverpool is also working with Scottish Power Energy Networks to upgrade the grid to increase electric vehicle charging points.

Climate Challenges

Liverpool faces challenges related to financing climate action, tracking its emissions, the composition of its building stock, and its economy. Like other local governments across the UK, fiscal austerity at the national level has reduced the City's budget. This means there are limited resources to develop new initiatives. Liverpool also lacks an updated carbon inventory against which it can track its progress. Council is aiming to have one ready by the end of the year.

In order to meet its targets, Liverpool must invest in deep residential retrofits. The City's old housing stock is a challenge: half of homes were built in the early 20th century. Council's Healthy Homes retrofit programme currently helps an average of 500 households per year with energy efficiency improvements to reduce their energy use and bills. For the City to meet its climate targets, the initiative must be scaled up significantly.

Lastly, there is tension between some elements of the City's economic aspirations and climate action. For example, the tourism industry is growing, with more flights and cruise ships expected to land in Liverpool—a challenge that could raise emissions, even as progress is made in greening the city.

Additional Resources

Liverpool Climate Change Strategic Framework
URBAN GreenUP project
Liverpool Healthy Homes - Home Improvement Agency

Contact

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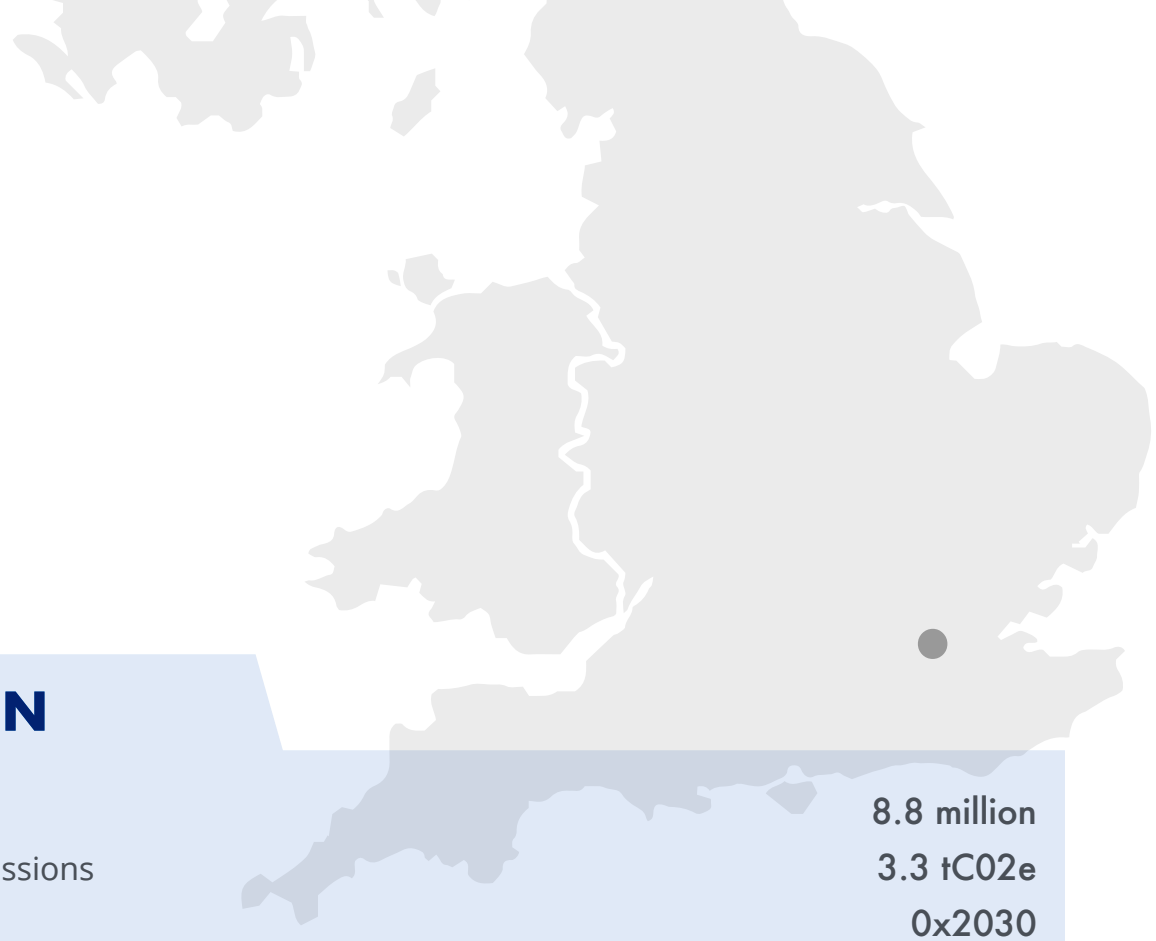

LONDON

Population	8.8 million
Per capita emissions	3.3 tC02e
Climate target	0x2030
2017 emissions	29 MtCO2e
Climate emergency declaration	December 2018
Climate lens for council decisions	Yes
Networks	GCOM, C40, Carbon Neutral Cities Alliance

Key Insights

- London has adopted a series of 5-year carbon budgets (distributed by sector) to track towards its GHG goal.
- The City includes GHG emissions from aviation and goods movement in its GHG inventory and has studied its consumption-based GHG emissions profile.
- The City has had a zero-carbon strategy for new homes since 2016. The City planned to expand the initiative to non-residential buildings in 2020.
- The divestment of public sector pension funds is a pioneering effort in the City's climate action.
- Being a founding member of C40 inspires the City to be a leader in municipal climate action.
- London Power is a carbon-offset gas and 100% renewable electricity distribution system set up by the City in 2019 as part of its climate action plan.

Climate Successes

As the founding city of C40, London has placed itself at the forefront of global action for cities on climate change. The City of London has also benefited from strong support for climate action from its mayor, who has championed the City's 1.5C Compatible Climate Action Plan.

London has a 70-person environment team, which includes a climate team of around 20, an equity team, and a green infrastructure team. For climate action funding, the Mayor sets a budget that is approved by the London Assembly, based on the priorities set for the City.

Supplementing their net-zero target, London has adopted a series of 5-year carbon budgets to track towards its goal. The budgets are distributed with specified emissions caps for homes, workplaces, and transport. In addition, the City is reporting GHG emissions from aviation and goods movement, production, and consumption.

The City's climate action has included divestment from fossil fuels for City pension funds, air quality improvement programmes, EV charging infrastructure deployment, electrification on transit and bus fleets, a solar programme, retrofit financing, planning policies including zero-carbon homes, and more.

The City's plan also outlines four strategic approaches for innovation on climate change, including: 1) developing a low-carbon circular economy; 2) becoming a smart digital city; 3) expanding green infrastructure and adopting natural capital accounting; and 4) adopting a Healthy Streets approach, which encourages more Londoners to walk, cycle, and use public transport.

The City has sector-specific targets, which include: deploying local zero GHG emissions zones for 2025; sending zero waste to landfill by 2026; meeting 15% of its energy demand by renewable energy, including one gigawatt of solar capacity, by 2030; and reaching zero carbon in its gas and electricity networks by 2040. Further, London is planning to become the world's first National Park City by protecting its green spaces and achieving at least 50% green cover.

To support its energy targets, the City has established its own carbon-offset gas and 100% renewable electricity supply company, London Power. The company is committed to ensuring low prices, supplying renewable or low-carbon energy, and investing its profits into delivering on the Mayor's social and environmental goals. This supports the City's Energy for Londoners programme and bulk purchasing of solar PV panels to ensure affordability for residents, amongst other initiatives. The City is also supporting local communities to produce solar power at low costs through bulk-buying schemes.

In 2019, the City launched its Ultra Low Emissions Zone in the city center, where vehicles that do not meet its standard are required to pay a fine. Between February 2017 and February 2020, there was a 44% reduction in roadside concentrations of nitrogen dioxide in the central zone. Compliance was at almost 80% as of January 2020.

For the implementation of the City's 1.5°C Plan, London is studying how much capital will be needed. The City will be required to report on the extent to which funds used have helped them to achieve their environment and climate goals.

Climate Challenges

A key challenge for the City is the massive investment required to deliver on its climate ambitions, which it estimates to be in the trillions of pounds. The City also faces challenges in governance, and is calling on the national government to transfer powers to limit non-transport GHG emissions to the Mayor.

Additional Resources

Zero Carbon London 1.5°C Action Plan

Contact

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MANCHESTER

Population	550,000
Per capita emissions	3.8 tC02e
Climate target	0x2030
2017 emissions	2.1 MtCO2e
Climate emergency declaration	July 2019
Climate lens for council decisions	Yes
Networks	GCOM, Energy Cities, UK 100, UK Core Cities

Key Insights

- Manchester established a carbon budget to support the implementation of its targets and ensure alignment with the IPCC 1.5°C global carbon budget.
- The City's GHG emissions inventory and actions go beyond the traditional scope, including aviation and emissions from production, transportation, and disposal of goods.
- The climate agenda is embedded throughout City Council and other departments, which integrate it into their work plans.
- Manchester's Climate Change Framework was developed and is championed by a multi-stakeholder Climate Change Partnership comprised of 60 members across ten sectors.
- The Manchester Climate Change Agency manages the City's climate change efforts and coordinates the Climate Change Partnership, but requires 10-20 staff to support their plans, versus the 2-3 they currently have.

- Bold climate action attracts funding and willing partners.
- Working in partnership with other levels of government is fundamental to Manchester's success.

Climate Successes

The City of Manchester has taken a bottom-up approach to its climate action efforts. Rather than these being driven by City Council or staff, the City's Climate Change Framework was developed and is championed by a Climate Change Partnership, composed of representatives from local climate advocacy groups, faith-based groups, local university faculty, the Manchester City Football Club, local business representatives, members of Council, and more. Collectively, they work to engage and empower city residents and organisations, using the leverage of their members' wide-reaching networks. The Climate Change Partnership has also enabled Council members to understand how and when they can use their powers to provide support, incentives, and standards to enable the community to take action. As a result, Manchester's climate action plan comes with partners and supporters already lined up, making it easier to jump-start implementation.

The City's Climate Change Agency coordinates the larger Climate Change Partnership and manages the City's climate efforts with only a programme director and two additional staff. The Agency is working to increase these staff numbers; they would hope to have closer to 20 staff to deliver on the level of ambition that they have endorsed. The City is working to support other cities across the EU in adopting a similar approach to their successful Agency and Partnership.

Citywide, Manchester has developed a Climate Change Framework specifying the steps the City will take to become zero carbon by 2038, twelve years ahead of the national target; halve the City's GHG emissions between 2020 and 2025; and remain within a carbon budget of 15 $MtCO_2e$ between 2018 and 2100. Its GHG emissions inventory and actions go beyond the traditional scopes of energy, buildings, waste, and transportation to include GHG emissions from aviation, as well as from the production, transportation, and disposal of goods consumed.

To set their targets, the City was supported by the Tyndall Centre for Climate Change Research, which helped Manchester calculate its carbon budget, model different levels of ambition on climate action, and determine appropriate GHG emissions reductions targets. Having established their targets and plans, a next step for the City will be to go into more detail on the technical side to identify appropriate pathways and strategies for their GHG emissions reductions.

Climate Challenges

While the City has had success in supporting and leveraging the ambition of climate change advocates, they recognise that the next phase of engagement will be more difficult in terms of getting support from industry, businesses, and citizens who do not yet support their agenda. They will have to highlight the economic and social benefits of climate action to gain supports, and are in the early stages of planning for this.

The City must ramp up its annual 7% emissions reduction rate to 18% immediately and 30% by 2025 to stay within its carbon budget—a challenge that demands a high magnitude of work, investment, and action. On top of this, its 7% reduction rate was partly thanks to national grid decarbonisation, meaning that Manchester has to double its rate of reductions throughout the city. Working in partnership with other levels of government will be fundamental to its success.

As for many cities, resourcing is also a challenge for Manchester. On the technical side, the City requires capacity to support Partnership members to develop programmes and get things done. On the non-technical side, it needs capacity to continue to move forward with engagement, which it recognises as crucial to advancing the work. The City noted the importance of having staff resources in place from day one. In addition, the City is seeking strategies that are self-sustaining or self-supporting once implemented, rather than reliant on external funding or additional City budget allocations on an ongoing basis.

Additional Resources

Mancheter Climate Change Agency
Manchester Climate Change Partnership
Manchester Climate Change Framework 2020-2025
ManchesterClimate.com
Zero Carbon Manchester

Contact

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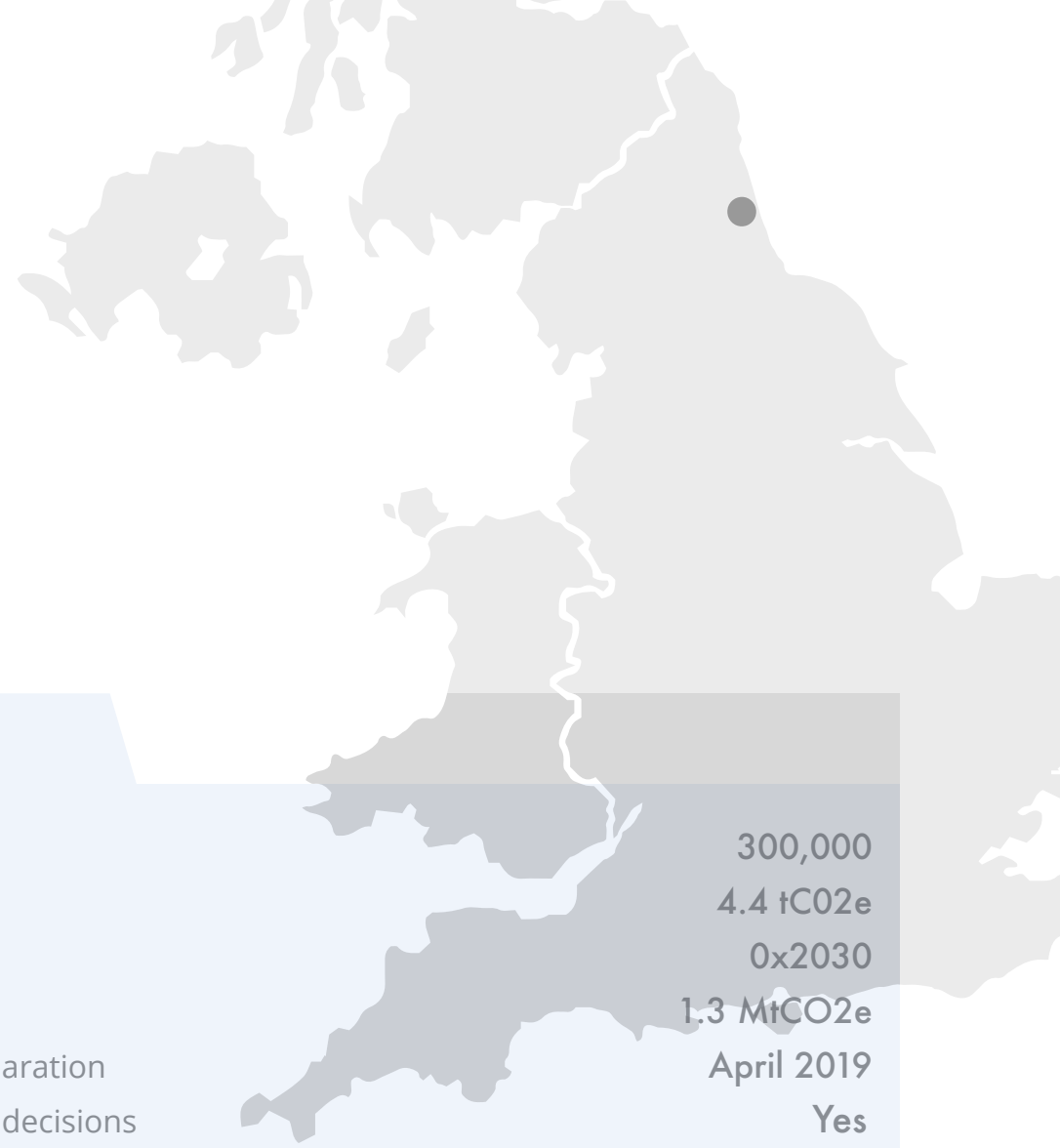

NEWCASTLE

Population	300,000
Per capita emissions	4.4 tC02e
Climate target	0x2030
2017 emissions	1.3 MtCO2e
Climate emergency declaration	April 2019
Climate lens for council decisions	Yes
Networks	GCOM, Core Cities

Key Insights

- Climate action is embedded within the work plan of several City departments, and is now a dedicated work stream under the banner of 'Net Zero Newcastle – 2030' with a full city-wide governance structure.
- The City's home energy retrofit and local energy programmes have leveraged local partnerships, especially with low-carbon technology companies.
- Newcastle's decarbonisation efforts have been fuelled by a push for improved air quality, exemplified by the establishment of a downtown clean air zone.
- The City feels that a lack of funding has significantly limited the scope of their climate action to date.

Climate Successes

Newcastle declared a climate emergency in April 2019 and has set a target of net zero emissions by 2030. Newcastle has put its most innovative efforts into district heating and home insulation. Council has proved to be a leader in developing partnerships to advance their sustainability agenda. Key success stories include three innovative heating, insulation, and domestic GHG emissions projects made possible through outside partners, which are described in more detail below.

Through these partnerships and targeted government research teams Newcastle has made strides in investigating how people are using energy and how the Council can change those patterns to reduce GHG emissions.

Climate action is now a dedicated work stream under the banner of 'Net Zero Newcastle – 2030' with a full citywide governance structure. The City's Climate Change Committee takes advice from community and expert groups and provides recommendations to Council on actions and resources. In addition, the Net Zero Task Force, consisting of experts, industry representatives, and community members, is working on the the City's Net Zero Pathway. Finally, Newcastle has a Citizens' Assembly that is externally managed by the North of Tyne Combined Authority.

Climate change implications are considered in advance of every cabinet decision. There are two dedicated climate change officers working to drive the agenda forward within the City: the City Futures Director and a staff member within Policy and Communications. There is an allotted £500,000 Council budget for climate action planning. Separate departments will also fund implementation.

Newcastle is collaborating with local low-carbon technology companies to improve the energy efficiency of its homes. For example, the City has placed energy monitoring technology in 55 homes to gather data to inform strategic business cases for retrofit projects. The City's council housing has also formed a partnership with a robotic underflooring insulation system to bring underfloor insulation to over 1,500 buildings by 2021. To date, over 80% of the Council's housing stock has improved its heating efficiency with a combination of improved insulation and high efficiency boiler replacements. They were also recently awarded £3.9 million to deliver one of three pilot projects for the Electrification of Heat Demonstration Project.

The Newcastle Helix District Energy Center is a £20-million project developed by ENGIE and Newcastle City Council that unites university research, business, and residential buildings by providing a living laboratory to trial innovative urban technologies. Through the Regenerate Newcastle Partnership between City Council and ENGIE, the City plans to offer affordable and efficient combined heat and power district heating, providing an estimated cut in GHG emissions of 30,650 tonnes over 40 years.

On January 9, 2020, Newcastle City Council approved a plan to implement a clean air zone around the city center. At the time of writing, Council was working on toll charges to deter drivers from entering the clean air zone. Newcastle has implemented 80 charging ports throughout the City, and is developing partnerships with local authorities to maintain and upgrade the existing network.

Climate Challenges

All UK municipalities are undergoing significant shifts in global partnerships after Britain's exit from the European Union. Newcastle, along with others, has experienced a lapse in their EU partnership but just joined CDP in 2020.

As with the majority of municipalities throughout the UK and the world, the largest barrier to action is funding. The limited budget leads to limited project development and a limited taskforce; inhibiting the City's capacity to review new ways of doing business and removing barriers to change. The City also cited that a lot of projects that they must implement to enable the Net Zero transition require them to take on substantial commercial risks, and the lack of central Government support in underwriting this risk makes these investments more difficult.

The city also struggles with the lack of power at the local level to, for example, implement a bus franchising model and integrated transportation network.

Increasing efficiency decreases GHG emissions in the short term, but ultimately Newcastle will be unable to curb their GHG emissions to the degree necessary to meet their targets without serious energy innovation to decarbonise their natural gas grid or eliminate their reliance on natural gas.

Additional Resources

Newcastle Climate Change
Net Zero Newcastle 2030 Climate Action Plan

Contact

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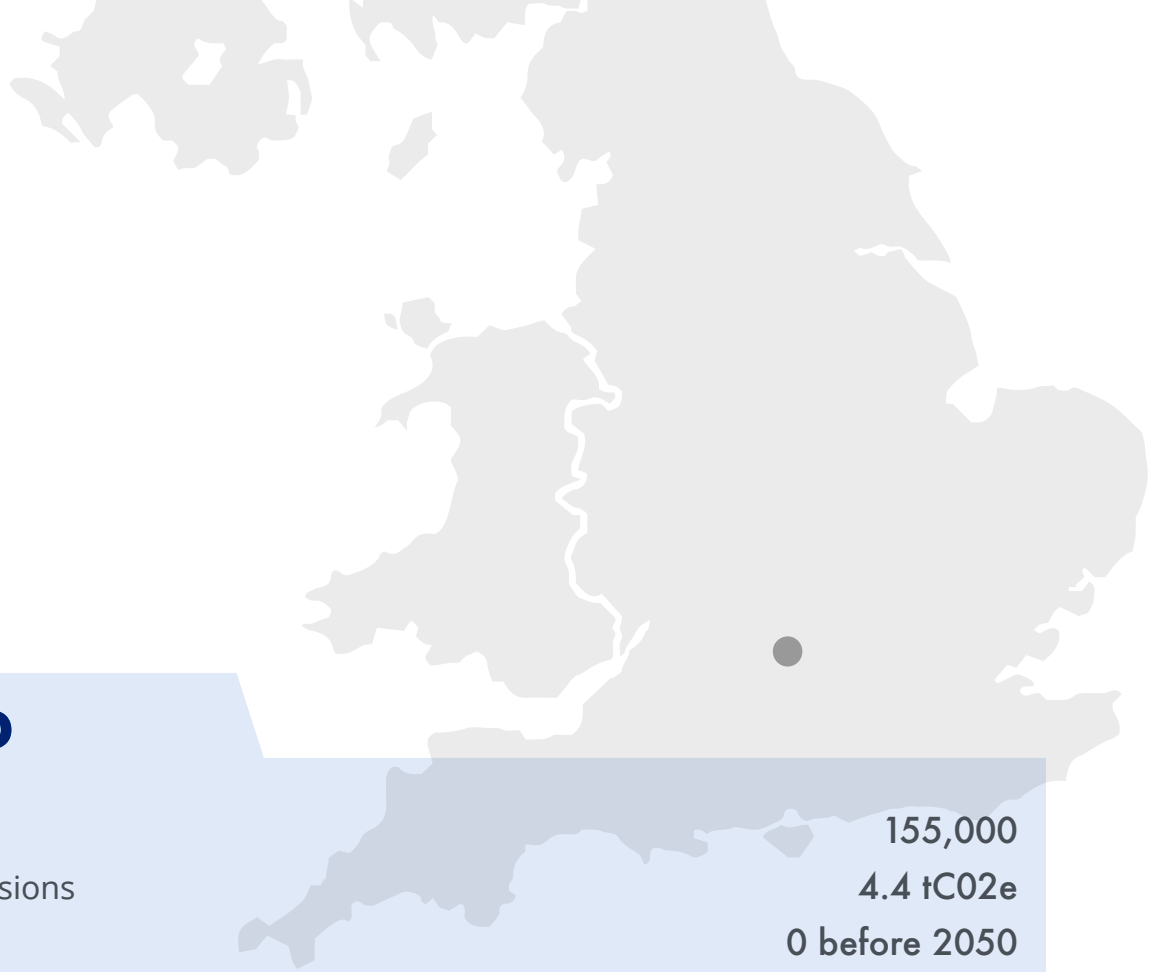

OXFORD

Population	155,000
Per capita emissions	4.4 tC02e
Climate target	0 before 2050
2017 emissions	0.7 MtCO2e
Climate emergency declaration	January 2019
Networks	GCOM

Key Insights

- The City is confident it will achieve its GHG reduction targets because it responded to its climate emergency declaration by: 1) establishing a Citizens Assembly on Climate Change; 2) establishing a cross-council approach, including formalised internal governance to lead and report on the Council's response to the climate emergency; and 3) committing a significant portion of its budget to the task.
- Oxford will track progress towards their GHG targets via 5-year carbon budgets.
- Public engagement has been and will continue to be key to implementing climate action. The City's efforts include the Oxford Citizens Assembly on Climate Change and a plan to establish a youth board.
- The City is participating in an innovative partnership project to establish a smart local energy system and support its low-carbon transition.
- Beyond electrifying its own fleet, the City also supports electrifying the taxi trade.

Climate Successes

Oxford's climate emergency response led to the creation of a formalised internal governance team to lead and report on its delivery by the Council. This will ensure a deeper involvement from staff across the organisation in the actions that the City Council is taking towards its target of net-zero emissions before 2050.

Holding a citizens assembly, which Oxford was the first city in the country to do, firmly pushed the climate emergency up the agenda within Council and the city at large. In support of this prioritisation, Oxford Council set a climate emergency budget committing an extra £1,040,000 over 4 years on top of £84 million of ongoing investment leveraged to tackle the climate emergency in Oxford and countywide.

Oxford's 42 assembly members were randomly selected as a representative sample of Oxford, and included members from all major political parties, climate and social scientists from Oxford University, representatives from the business sector, community organisations, Oxford Democracy Café, and Extinction Rebellion. Participants heard from dozens of experts who set out the scale of the issue and the range of options to reduce GHG emissions. All presentations were livestreamed on social media and all documents and videos were uploaded onto the Council's dedicated climate emergency web page to maximise engagement.

One of the key findings of the Citizens' Assembly was the widespread belief that Oxford should be a leader in tackling the climate crisis. The majority of Assembly members felt that Oxford should aim to achieve 'net zero' sooner than the national government's target of 2050, however, little consensus was reached on when this should be met. As such, the City will set and monitor progress against 5-year carbon budgets, determined by a science and evidence-based approach.

At the corporate level, pursuing zero-carbon operations is now one of four priorities listed in Oxford's Corporate Strategy. The priorities set in the Corporate Strategy feed down into individual service plans. All service plans are currently in the process of being updated with new requirements for specific actions and targets for how each area will contribute to a zero-carbon Oxford.

Oxford City Council is working in partnership to undertake one of the most ambitious smart energy grid projects in the UK: Project LEO (Local Energy Oxfordshire). Project LEO is a pilot project designed to replicate the electricity system of the future to better understand how to manage the transition to a smarter electricity system. It will inform how electricity utilities function in the future, create new investment models for community engagement, and support the development of a skilled community. The City of Oxford is also trialing the world's largest hybrid battery system (50MW) in a project called Energy Superhub Oxford.

An early win, Council installed one of the UK's largest public solar carports at its leisure centre in Blackbird Leys in December 2019. It consists of a canopy over 48 parking spaces that is made up of 350 solar panels delivering over 80 MWh of green electricity per year.

Oxford will be introducing the world's first Zero Emission Zone (ZEZ), initially in Oxford city centre in 2021—a key step in the goal of zero transport GHG emissions in Oxford by 2035. In addition, Oxford plans to introduce a workplace parking levy, new subsidised bus routes, high quality walking and cycling routes, citywide controlled parking zones, and programmes to transition fleet, taxi, and personal vehicles to electric models.

For housing, Council is targeting a 70% reduction in carbon in its stock. In the private rental sector, the City is encouraging greater energy efficiency through its licensing and enforcement programmes, such as are permitted by current legislation and project funding. The Council will remain proactive in the enforcement of minimum standards across the private rental sector, in addition to lobbying the national government to raise standards for rental housing and fund demonstration projects of energy-efficient rental housing. The City is planning to hold a retrofitting summit for stakeholders to discuss ways to make retrofitting more accessible.

In 2018, Oxford worked in partnership with Treeconomics to take stock of the City's urban forest and value the benefits it provides. The results showed that Oxford's trees store an impressive 76,400 tonnes of carbon, worth £18.8 million in terms of avoided stormwater treatment costs and social damage costs (from filtering air pollutants). Oxford has used this data to push forward tree protection and tree planting projects.

Climate Challenges

On top of the issue of climate change, Oxford faces major inequity. It is one of the UK's most unaffordable places to live, with one in four children living below the poverty line.[34] It is a city of polarities, with both the largest proportion of adults in full-time studies of any city in England and Wales and an almost equal amount of adults with no or low educational qualifications. As such, ensuring a just transition in its pursuit of its zero-carbon target will be paramount to the effort.

City Council also needs support from the central government to deliver net zero, through increased funding, guidance, and streamlined legislation to support industries in the transition.

Additional Resources

Oxford Citizens Assembly
Project LEO
Energy Superhub Oxford

Contact

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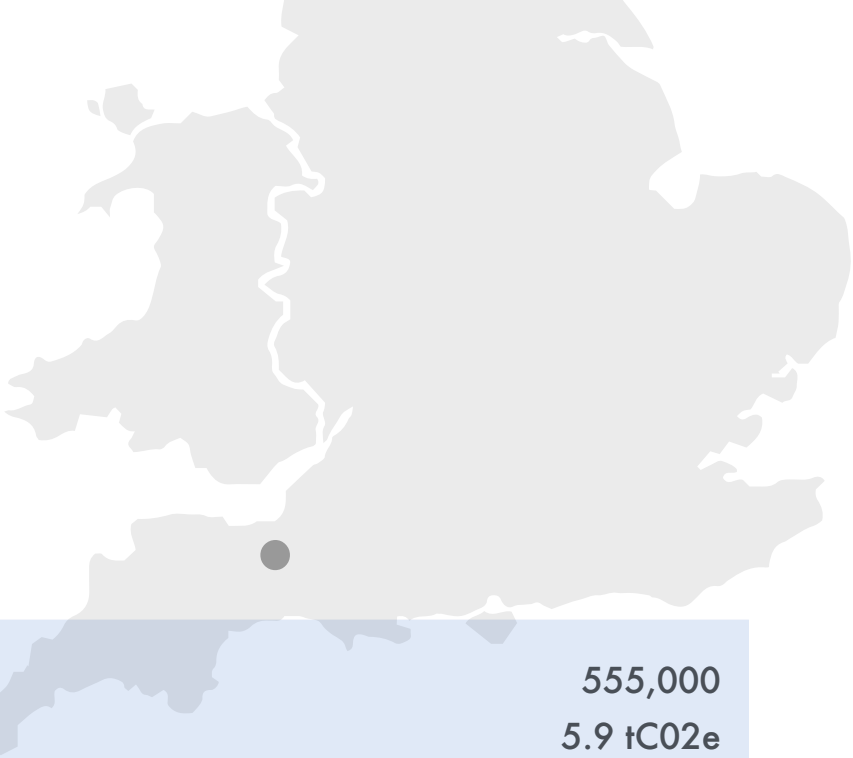
34 Oxford City Council website (accessed February 11, 2020): https://www.oxford.gov.uk/info/20131/population/459/oxfords_population



SOMERSET

Population	555,000
Per capita emissions	5.9 tC02e
Climate target	0x2030
2017 emissions	3.3 MtCO2e
Climate emergency declaration	February 2019
Climate lens for council decisions	Yes
Networks	UK100

Key Insights

- As a county containing several smaller local governments, Somerset's climate action has benefited from coordinating with local governments to ensure alignment in regards to national advocacy (including budget requests and a national policy framework) and within local climate action plans.
- To support the commercial sector in their efforts to decarbonise, Somerset established a business award and summit, where businesses can showcase how their GHG emissions reductions and climate change preparedness efforts affected their bottom line.
- Somerset's key governance and engagement challenges lie in its dispersed geography, politics, and demographics.
- Lack of government funding for climate action is particularly an issue for rural counties like Somerset, which have seen reduced government funding in recent years.
- In terms of transit, the low-density population requires transport to access services; however, the development of profitable or break-even transit options is difficult.
- The County also believes more devolved responsibility and funding would enable them to deliver relevant solutions specific to their contexts.

Climate Successes

One of the keys to Somerset's success with climate action to date has been its efforts in engagement and collaboration with the commercial sector, other levels of government, and the public.

For engagement with the commercial sector, Somerset established a business award and summit, allowing leaders to showcase how their successful GHG emissions reductions and climate change preparedness efforts affected their bottom line.

For government collaboration, the County brought together their five councils to jointly establish, develop, and fund their Climate Emergency Strategy. Development of the Climate Emergency Strategy (yet to be released at time of writing) was allocated a £25,000 budget, while each District also had their own budgets set aside for their own plans development (of up to £100,000). The County also coordinated the local councils to collectively engage with higher tiers of government, jointly putting forward their big asks for commitment, funding, and modifications to the national policy framework. Similarly, the County worked with local councils to revisit and align their own local plans.

Public interest in climate action has increased due to concerns about recent flooding, as well as a growing groundswell of people supporting global action and petitioning local leaders to take charge. Somerset was able to leverage this interest and engage over 5,000 people in their online Climate Emergency Framework survey, while other efforts have focussed on behaviour change, including a food waste diversion campaign which brought about a 30% increase in composting within its first few weeks.

The County's Climate Emergency Plan is also supported by a collection of stakeholders who were brought together to define its desired outcomes. The stakeholders include a Strategic Management Group from the five councils, partners from the National Farmers' Union, Wildlife Trust representatives, and others. Further expertise is provided by a Climate Action Network, as well as the University of Exeter.

Efforts that the County has successfully implemented have included: procurement of renewable resources for district buildings in South Somerset, expansion of the Yeovil Innovation Centre using sustainable building materials and minimal construction waste, retrofits to County Council buildings, launching a £1-million fund for town and parish councils' climate initiatives, and current development of a county-wide, cross-authority Electric Vehicle Strategy.

The County is working with businesses and industry through several channels, including its business award and summit. Somerset has established a workstream for its Framework development that will address industry, business, and supply chain GHG emissions; challenges in acquiring energy use and GHG emissions data; and consumption-based GHG emissions.

Climate Challenges

With approximately 15% of Somerset County's land at or just above sea level, the county is particularly vulnerable to climate change impacts. Flooding from heavy rainfall in 2013-2014 affected 600 homes and 6,900 hectares of agricultural land, and resulted in £147 million of lost income.[35]

Somerset's key challenges lie in its dispersed geography, politics, and demographics. From a governance perspective, they must coordinate five different leading groups, the National Farmer's Union, and a whole host of stakeholders with varying interests. From an engagement perspective, significant effort must continue to be made to target and involve a wide array of interest groups.

The County acknowledges that transportation will be one of the key challenges to tackle in the development and delivery of its Climate Emergency Strategy, owing to the county's rural nature. Efforts in reducing GHG emissions from transportation have been advanced within the Districts, including installations of electric vehicle charging stations, and the development of local cycling and walking infrastructure plans, with help from the County Council, however, much more will need to be done.

Lack of government funding for climate action is also an issue, especially as rural county funding has been limited over the years. Limited funds means that low-carbon actions must be prioritised for maximum impact and their ability to leverage further funds. Somerset has the highest percentage of people aged 65+ in the UK (33.7%), as well as high levels of poverty, dispersed across its nearly 3,500 square kilometres. Funding mechanisms for energy retrofits must also be tailored to minimise negative impacts to low-income residents. In terms of transit, the low-density population makes the development of profitable or break-even transit options difficult.

The County also believes more devolved responsibility and funding would enable them to deliver relevant solutions specific to their contexts. Current solutions and funding are largely city-centric, which poses difficulties for the County to find exemplary benchmarks and strategies.

Additional Resources

Somerset Climate Emergency Framework

Contact

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35 Climate Emergency. Somerset County Council Website. 2020. https://www.somerset.gov.uk/waste-planning-and-land/climate-emergency/#Latest-news