

# Decarbonising Consumption

## IN MANCHESTER'S COVID-19 RECOVERY

**COVID-19 PROVIDES AN OPPORTUNITY TO PAUSE & RETHINK**

A REPORT PREPARED BY  
DR JANA WENDLER  
DR JOE BLAKEY

**INFLUENCE**  
PULL ALL THE LEVERS IN ORDER TO DECARBONISE  
IT'S BEEN A NARROW READING OF OUR CARBON ACCOUNTABILITY  
THE CITY'S RECOVERY PLANS



Drawn by Claire from [WWW.MORETHANMINUTES.CO.UK](http://WWW.MORETHANMINUTES.CO.UK) @visualminutes @MerClimate

# AUTHORS

**Dr Jana Wendler** is a Research Associate in Geography at the University of Manchester, and a freelance public engagement practitioner. Her work focuses on the social and cultural dimensions of urban well-being and sustainability, and is grounded in qualitative and creative research methods.

Email: [jana.wendler@manchester.ac.uk](mailto:jana.wendler@manchester.ac.uk)

**Dr Joe Blakey** is a Lecturer in Human Geography at the University of Manchester. His work focuses on the political, economic, and social challenges of environmental change and post-carbon futures.

Email: [joe.blakey@manchester.ac.uk](mailto:joe.blakey@manchester.ac.uk)

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**Disclaimer: The views in this report do not reflect the opinions of the Manchester Climate Change Agency and Partnership.**

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## SUMMARY

The novel coronavirus (COVID-19) pandemic, and the measures to mitigate it, has taken a dramatic toll on our lives. As difficult as the pandemic continues to be, it is sobering to remember that the effects of climate change could be even worse. To limit global heating, we have only a very limited amount of carbon that can be emitted before the end of the century, and it is imperative that countries and cities strengthen their zero carbon commitments and follow them with decisive action. While the COVID-19 crisis has increased pressures on national resources and added urgent threats to public health, it has also provided a unique opportunity to rethink our priorities and approaches. As we plot our way out of the pandemic there is an opportunity to put carbon reduction at the centre of our recovery efforts.

Consumption-based emissions have a key role to play here. Cities tend to focus their zero carbon efforts on production-based emissions: those that occur within their boundaries or those associated with their energy supply. This approach leaves a large gap, however, as it ignores the emissions arising from the consumption of goods and services within the city if these emissions are generated elsewhere. Cities such as Manchester, with an import-based economy, effectively outsource a large amount of their carbon emissions to areas where goods and services are produced. It is estimated that the consumption-based footprint for Manchester is at least 1.5 times larger than its production-based footprint. For a more holistic picture, these emissions need to be considered in parallel.



This report considers five consumption-based emission hotspots for Manchester, which have been identified from across the literature by Dr Christopher Jones (2019) of the Tyndall Centre and the Manchester Zero Carbon Advisory Group: Food & Drink, Waste & Wastewater, Construction, Other Goods and Materials and Transport Beyond the City. It brings together academic and grey literature alongside insights generated from two workshops with academics, organisations and citizens held in October 2020 to delve deeper into each of these topics. The report outlines specific areas for action – some immediate ‘low-hanging fruit’ and more comprehensive and ambitious changes (see Table 1, overleaf). These recommendations are framed by six ‘Big Picture’ messages which guide and bind a climate-oriented recovery:

- **We need a climate-first recovery.**
- **Take a holistic perspective.**
- **The problem is inequalities in consumption.**
- **Society is open to change.**
- **Cities need to emerge as leaders - together.**
- **Be bold - start where things are difficult.**

In order for Manchester to fulfil its commitments to become a holistically zero carbon city, it needs to make both consumption- and production-based carbon reduction a key part of its recovery strategy and expand the zero-carbon goal outlined in the city’s Economic Recovery and Investment Plan. Consumption-based emissions should also be a central focus in the forthcoming refresh of the 2020-25 Climate Change Framework and inform the reset of Our Manchester Strategy. This report supports this effort. The suggestions made are non-exhaustive. This report instead signposts a direction and sets out an agenda for further detailed work for policy makers, academics and the wider Manchester community. The suggestions will also be relevant to other cities with service sector-based economies.



Table 1 – Summary of recommendations. Arranged by emissions hotspot, ‘low-hanging fruit’ and ‘ambitious actions’. The points suggested are detailed within the report.

| Consumption-based Emissions Hotspot | Low-Hanging Fruit  | Ambitious Actions   |
|-------------------------------------|--|---|
| <b>Food and Drink</b>               | <ol style="list-style-type: none"> <li>1. Promoting low carbon food within organisations and public institutions</li> <li>2. Low carbon school meals and food education</li> <li>3. Local recovery programmes to support low carbon food</li> <li>4. Local planting efforts</li> </ol> | <ol style="list-style-type: none"> <li>1. Support a wider low carbon food culture</li> <li>2. Re-thinking work-life priorities to enable more sustainable food practices</li> </ol> |
| <b>Construction</b>                 | <ol style="list-style-type: none"> <li>1. Intervening across the life cycle of construction materials</li> <li>2. Encourage experiments to increase acceptance of low carbon construction</li> <li>3. New planning and procurement rules to include carbon indicators</li> </ol>       | <ol style="list-style-type: none"> <li>1. Create local base of low-carbon skills, knowledge and resources</li> </ol>  |
| <b>Other Manufactured Goods</b>     | <ol style="list-style-type: none"> <li>1. Decarbonising final-mile delivery</li> <li>2. Rethinking advertising</li> </ol>  | <ol style="list-style-type: none"> <li>1. An ecologically viable economy and society</li> </ol>   |
| <b>Waste &amp; Wastewater</b>       | <ol style="list-style-type: none"> <li>1. Tackling food waste by supporting innovative businesses</li> <li>2. Reducing the need for wastewater treatment</li> </ol>  | <ol style="list-style-type: none"> <li>1. Moving towards a circular economy</li> <li>2. Creating infrastructure for better waste management</li> </ol>                              |
| <b>Transport Beyond the City</b>    | <ol style="list-style-type: none"> <li>1. Sustain and accelerate active travel schemes</li> <li>2. Improve integration between cycling and the Metrolink</li> <li>3. Encourage large institutions to rethink their business travel practices</li> </ol>                                | <ol style="list-style-type: none"> <li>1. Addressing travel privileges and inequalities</li> <li>2. Thinking through transport and housing in a holistic way</li> </ol>             |

# **INTRODUCTION**

**Consumption-based emissions  
and the COVID-19 recovery**

# INTRODUCTION

We find ourselves at a pivotal moment. As we grapple with ways to recover from the novel coronavirus (COVID-19) pandemic and its impacts on our personal, social and economic life, the climate emergency escalates around us. To avoid dangerous levels of warming, we have an increasingly limited amount of carbon that can be emitted before the end of the century. 2020 has illustrated the scale of the challenge: the dramatic changes to people’s lives across the world due to the pandemic are expected to have reduced global carbon emissions by 6% from the previous year. This is still short of the 7.6% annual reduction required to limit global warming to 1.5°C against pre-industrial levels (United Nations, 2020).

Our responses to both crises are intrinsically linked. Some see COVID-19 as a test-run for what is to come, a prelude to much bigger climate-induced crises in the near future. There are stark warnings that with the wrong post-COVID-19 recovery we may “leap from the COVID frying pan into the climate fire” (Hepburn, O’Callaghan, Stern, Stiglitz, & Zenghelis, 2020, p.4). At the same time, the pandemic has shown us that society is capable of taking quick decisions and drastic action in the face of an emergency, and that we can do so with empathy and solidarity. The immediate effects of pandemic restrictions on the climate are expected to be negligible but a long-term green recovery and investment strategy can put the world on track for its climate goals (Forster et al., 2020).





COVID-19 requires us to rethink everything from our everyday behaviours to our economic systems, and we are presented with a unique opportunity to recover cleaner and greener. Now is the chance to make fundamental change: to expand and accelerate our movement towards a post-carbon future. With limited resources, overlapping pressures and the atmosphere harbouring increasingly dangerous levels of carbon, climate change commitments must be at the foundation of cities' COVID-19 recoveries. Otherwise, we face longer-lasting and deeper-hitting crises to come, affecting the health and prosperity for all.

The role of consumption is crucial in this context. Consumption-based carbon accounting has received increasing attention as an additional approach to understand the wider role of cities in planetary carbon emissions (Jones, 2019). Cities usually consider so-called production-based emissions: those that occur within their boundaries ('scope 1') or those from generating the electricity that supplies them ('scope 2'). It is these emissions that are addressed in Manchester's zero-carbon budget. However, cities do not exist in a vacuum. The actions taken in cities can affect the production of emissions outside of them. Consumption-based emissions (or 'scope 3' emissions) relate to all emissions arising from the consumption of goods and services within cities, even if those emissions are produced elsewhere. They cover emissions associated with a laptop that is purchased in Manchester but produced in China, those embodied in Scottish beef served in a Manchester restaurant and the full impact of flights taken by Manchester residents from airports across the UK. Based on work by the C40 on averages in cities worldwide, we can expect Manchester's consumption-based footprint to be sizeable, at least 3.3 MtCO<sub>2</sub>, about 1.5 times the size of its production-based footprint, though there is some overlap between the two (see Figure 1). As this is based upon the footprint of all C40 cities, it is important to note that this is likely an underestimate.

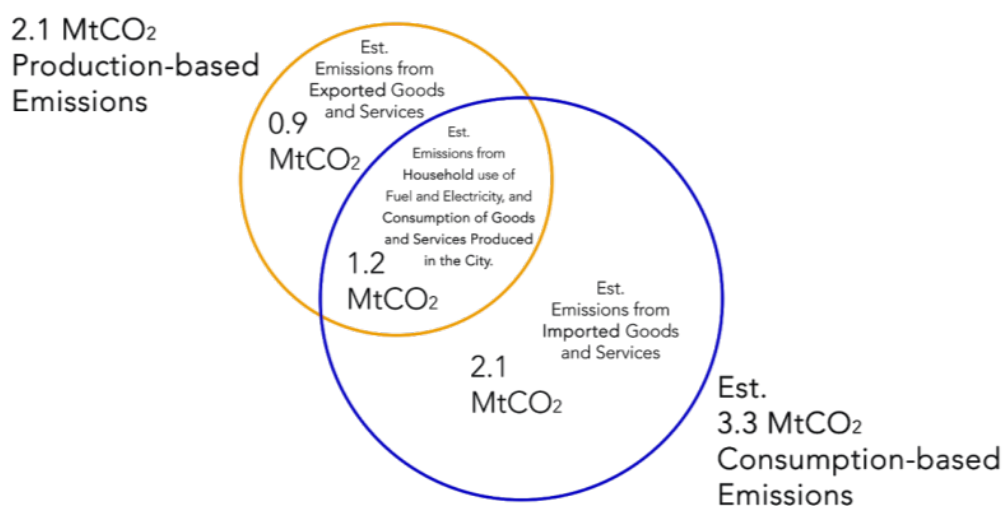


Figure 1 - Estimated consumption-based footprint for the City of Manchester. Based on 2017 BEIS data and the consumption-based footprint of the C40 cities (Manchester Climate Change Partnership, 2020; p.27).

Production and consumption-related emissions need to be considered in parallel. Doing so flags up blind spots and helps us to understand the city's relationship with carbon more holistically. Looking solely at emissions occurring within our borders (and from electricity) presents an overly simplistic picture. Instead, we have a much more complicated relationship with the planet's anthropogenic carbon emissions. Emissions are often 'outsourced' (Harris, Weinzettel, Bigano, & Källmén, 2020), meaning that some emissions-intensive activities have simply been moved to other places, rendering them invisible in our own carbon accounts. This is a particular problem in service- and import-based economies such as Manchester's. It is for this reason that Manchester has committed to the reduction of consumption-based emissions alongside its production-emissions and energy use in its Climate Change Framework 2020-25. COVID-19 has changed the context of how this Framework is delivered, but the need to play our full part in planetary decarbonisation remains. The City Council has further agreed to embed climate change priorities in the city's COVID-19 recovery. But there are many questions on how best to do this.

At the national level, early recovery interventions such as those set out in the Chancellor's Plan for Jobs in July 2020 (HM Treasury, 2020) continue to encourage consumption as the means to revitalise the economy. A prime example is the 'Eat Out to Help Out' scheme, which was introduced to help the struggling hospitality sector and save jobs after the first UK lockdown by enticing people to visit restaurants with subsidised food and drink. More recently, Chancellor Rishi Sunak urged those who have made savings during lockdown to splash out to revive the economy. Yet from a climate perspective, this is a worrying approach. We need to recover from COVID-19, but it is vital we do not 'bounce back' to a high-carbon economy or indeed intensify this relationship. Instead, we need carefully considered interventions that can enable a long-term sustainable and holistically zero-carbon economy – and this must include our relationship with consumption.

Prior to, and throughout the crisis, the level of over-consumption in higher income countries and in Western cities in particular has been a huge source of carbon emissions. Estimates for Bristol indicate that its consumption-based emissions are three times higher than its production-based footprint (Millward-Hopkins, Gouldson, Scott, Barrett, & Sudmant, 2017). Even if significant progress is made with regards to production-based emissions, our consumption patterns need to change. The consumption of goods and services in high income cities is a crucial lever of action and must be reduced by two thirds within the next

You listen to plans for recovery and what they're saying is always consume, consume, consume - we need to get people back to places and start consuming things. But that is really hard to square with a carbon perspective where we want to be saying: consume less.

Participant, Workshop 14 Oct 20

decade to prevent climate breakdown (C40, Arup, & University of Leeds, 2020). Moreover, leaving future increases in consumption unchecked could undermine decreases made in current zero carbon targets (Erickson, Chandler, & Lazarus, 2012). Thus, a recovery based on unchecked consumer spending would appear short-sighted at best and outright dangerous at worst. While we cannot yet effectively measure and monitor consumption-based emissions in detail, particularly at city level, this should not prevent action. In many cases we already know what we need to do, as demonstrated by the recommendations by the Climate Assembly UK in their recent summary report (Climate Assembly UK, 2020). But we need to make it happen.

-  **Waste and waste water**
-  **Construction**
-  **Food and drink**
-  **Other manufactured goods**
-  **Use of transport beyond the city**

*Figure 2 – Manchester’s consumption-based emissions hotspots*

This report explores the opportunities for a low-carbon COVID-19 recovery with regards to consumption-based emissions. It is focused on the City of Manchester, based on the consumption-based emission hotspots identified by the Tyndall Centre and the Zero Carbon Advisory Group (Figure 2). However, many of the recommendations will be applicable elsewhere. The report positions itself at the meso-scale: based on the headline messages presented by the Tyndall report on *Consumption Based*

*Emissions Accounting for Manchester* (Jones, 2019) it pinpoints specific areas for action, which will then require more detailed and focused studies in future. From a policy perspective, it supports the work on the reset of the city’s ‘Our Manchester’ strategy (Manchester City Council, 2015) and the forthcoming refresh of the 2020-25 Manchester Climate Change Framework (Manchester Climate Change Partnership, 2020) by highlighting possible pathways for intervention. It also speaks to the recent Economic Recovery and Investment Plan (Manchester City Council, 2020), in which ‘zero-carbon’ is identified as a strategic investment priority for the city. Thus, it seeks to set the agenda for academics, local policy makers and the wider Manchester community to do further work.

The report takes a three-pronged approach. Firstly, it identifies six ‘Big Picture’ messages that underpin the discussion on how to decarbonise consumption. These themes reflect the grounding principles agreed by the Climate Assembly UK (2020). They cut across the hotspots and address wider values and approaches that both constrain and enable a climate-focused recovery. Secondly, the report spotlights practicable steps to reduce consumption-based carbon emissions in Manchester. Where possible, these interventions make use of existing initiatives and policies with small adjustments. We should take these steps and reap their benefits where we can. Finally, it sets out more comprehensive and radical shifts that are needed to achieve our targets. As the climate emergency deepens, we cannot afford to only take the easy options. We have to take tough decisions too – much as we have done

collectively and consensually during COVID-19. While we cannot expect the actions taken on one crisis to translate directly to another, the COVID-19 response gives us both hope and a task:

“The lesson from COVID-19 is more subtle: it shows that the challenge for climate strategy is not to assume, as politicians have done, a limited room for manoeuvre on climate, but rather to **work with citizens to explore what is possible.**”

(Howarth et al., 2020,p.1112)



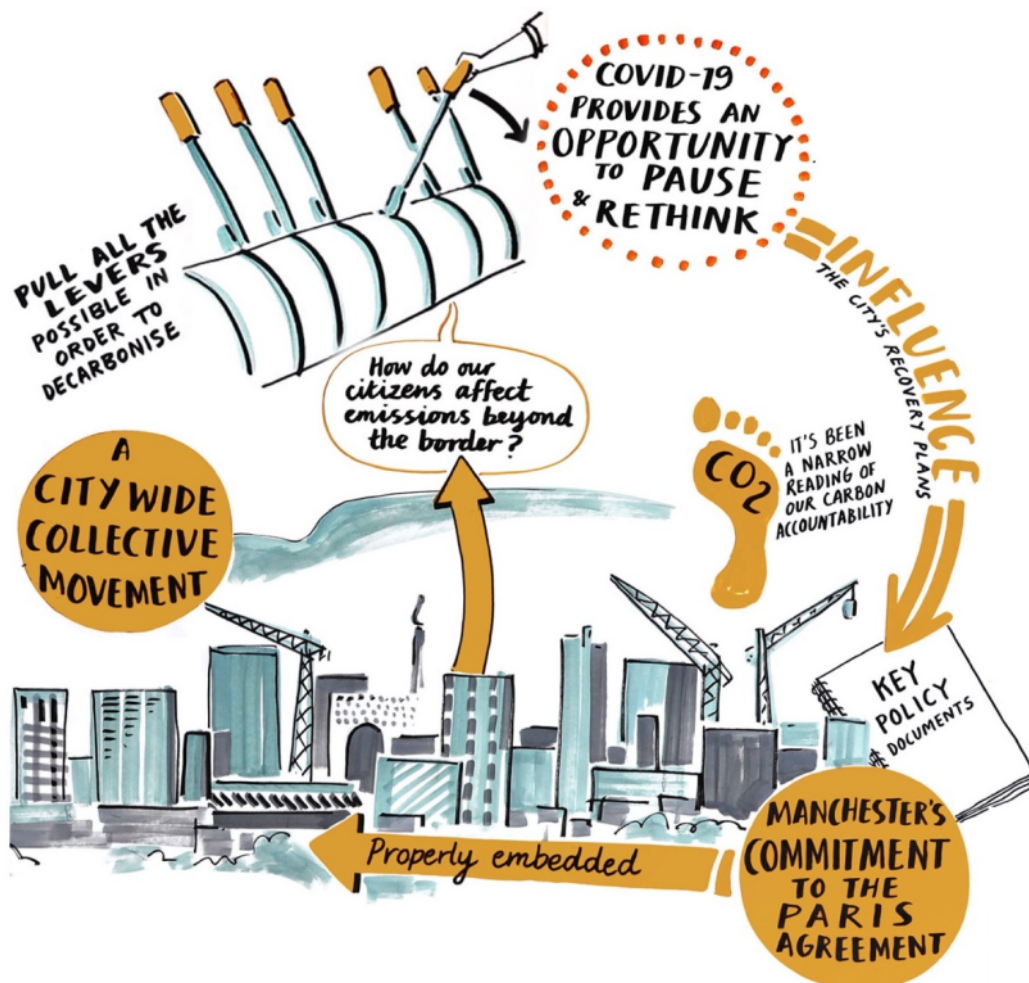
# THE APPROACH TAKEN

This report is based on the review of relevant academic and grey literature in three key areas:

1. The consumption-based emissions approach (with a focus on literature from the past five years).
2. Initial analyses of the changes to our social and economic life caused by COVID-19, including their climate impacts.
3. The role of climate commitments in the post-COVID-19 recovery.

It also includes themes and suggestions from two workshops with academics and citizens/organisation from Manchester held online in October 2020. The workshops asked participants to consider the opportunities, challenges and possible actions presented by COVID-19 with regards to decarbonising consumption around the five hotspot topics (Food & Drink, Waste & Wastewater, Construction, Other Goods and Materials and Transport beyond the City).

The illustrations in this report are taken from visual minutes of the workshops created by More Than Minutes.



# **BIG PICTURE MESSAGES**

**The principles binding our recovery**

# BIG PICTURE MESSAGES

## 1) We need a climate-first recovery.

“What do we decide to recover? And what do we decide not to recover? And how do we support people that will not recover in the same manner?”

Participant, Workshop 14 Oct 2020

This question, raised by a workshop participant, encapsulates the first key message of this report. Economic recovery from COVID-19 is a key focus for policy makers. Yet the type of recovery policies to be implemented will have dramatic impacts for progress on climate change: they could entrench, worsen or displace our current carbon intensive economic systems and lifestyles (Hepburn et al., 2020). The challenge is to utilise recovery policies as a mechanism for low carbon change. Recovery needs to be more than just replacement or rehabilitation. Instead it should generate positive outcomes that “address the fragilities and opportunities that the emergency has exposed” (Boaden et al., 2020, p.67). Cities are well aware of this. Bristol’s recovery strategy, for instance, states that its strategy is not “intended to take us back to where we were before” (Bristol One City, 2020, p.8). In other words, we need to build back better towards a holistically zero-carbon society. In line with a transition framework, which emphasises the importance of external shocks in triggering systemic shifts, we can therefore view the COVID-19 disruption as an opportunity to pause, to rethink, and to do things differently. What is more, COVID-19 also demonstrates that, when faced with a threat, society is capable of radical transformation.

Recovery is not just about aiming for immediate benefits but planning for the future. If we want to build a prosperous and secure economy for the long term, we have to solve climate change. In the workshops and the literature on COVID-19 and climate, there is a sense that to do so we need to reconsider our priorities, our models and our measures of success. Suggestions range from broadening our range of economic indicators

(workshop suggestion) to shifting from linear perspectives of ‘take, make, dispose’ towards circular economies (Prideaux, Thompson, & Pabel, 2020), buying less frequently, all the way towards a rethinking of the notion of growth as an ultimate necessity in our economy (workshop suggestion). This is not to say that there is not an urgent need to support people

“I think part of the general premise is that now everything that we took for granted can no longer be taken for granted.”

Participant, Workshop 14 Oct 2020

who are struggling as a result of COVID-19. Supporting people, businesses and organisations is essential. But it raises questions about the values that underpin our current systems and how we can create a sustainable and equitable economy that genuinely benefits people through sharing wealth and resources across a global society.





## 2) Take a holistic perspective.

A key lesson from both the literature and the workshop discussions is that we cannot think about climate change and emissions in isolated categories. As we outlined in the introduction, the different approaches to carbon accounting highlight different emission hotspots and suggest different plans of actions. None are sufficient on their own: for a city to live up to its role in fighting climate change, it needs to consider other perspectives of accountability<sup>1</sup> such as consumption-based emissions alongside production-based emissions (Blakey, forthcoming). In doing so, we can understand the role cities can play in reducing planetary emissions holistically, noting interactions and gaps in our planning (Tukker, Pollitt, & Henkemans, 2020). Thinking through relationships also helps inform the way we conceptualise and develop interventions around different emissions hotspots. Reducing carbon emissions from, say, car use is not only a transport issue - it is as much a question of housing and construction, of where, how and what we build. This relational understanding can help identify how cities are internally and externally connected and where our actions should be focused for the greatest impact. Most importantly, a holistic view highlights diverging but interrelated responsibilities for reducing our carbon footprint across all of the city's stakeholders and institutions. It provides the basis for robust and effective systems of accountability which reflect existing levels of influence and resource.

A holistic understanding of carbon emissions reduction also matters in other regards. The call to decarbonise consumption comes amidst a host of other societal needs which compete for attention and resources, many of them made even more urgent by the COVID-19 crisis. But there is hope: many climate goals support rather than jeopardise other objectives, and these co-benefits can be maximised through careful planning. In the context of decarbonising consumption across different sectors, these include improved public health, cleaner air, new job opportunities and a reduction in poverty and inequality. In fact, cities have been identified to be ideally placed to capitalise on these co-benefits as they hold relevant budgets and understand the interaction of different policy priorities at local level (Jennings, Fecht, & De Matteis, 2019). Moreover, using the different rhetorics around co-benefits enables a much wider discourse around health and well-being that speaks to different publics. The main message here is that as a city we should not approach decarbonisation as a 'climate – or' choice and instead actively work towards greater synergies. The co-benefits perspective also pushes against the idea that climate action – particularly in the COVID-19 recovery – will be detrimental to the economy and our way of life. Far from it: it embodies a much more long-term view of benefits and gains, and a more resilient business model.

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<sup>1</sup> Though beyond the scope of this report, a further under-investigated yet vital lever is cities' income-based or downstream enabled emissions responsibility, which relate to all of the emissions consequent from investments made from a city (Marques, Rodrigues, Lenzen, & Domingos, 2012).

### 3) The problem is inequalities in consumption.

"A question that's going through my head is: is consumption a human right?"

Participant, Workshop 14 Oct 2020

This question by one of the workshop participants triggered a lively debate around the ethics, rights and responsibilities attached to consumption. Article 25 of the Universal Declaration of Human Rights states that everyone has "the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care". We need to ensure this right. At the same time, a recent Oxfam report shows that the richest 10% of the world's population are responsible for more than half the global greenhouse emissions, depleting the world's carbon budget by nearly a third in 25 years (Oxfam, 2020a). The problem with consumption emissions, therefore, is not one of subsistence. It is overconsumption, where a minority of people consume far more than is what is sustainable for society as a whole. Moreover, within the EU, consumption emissions of the poorest half of citizens fell by nearly a quarter in the years between 1990 and 2015 and grew by 3% for the richest 10% (Oxfam, 2020b). This disparity raises questions around who is currently shouldering reduction efforts. It brings into focus issues of fairness and justice and singles out high-consumption lifestyles as the major emissions culprit (Grasso, 2017). With a finite amount of emissions to spend, we need to make decisions on how to distribute these resources and where to target reductions.

Manchester is an unequal city. While 21 local neighbourhoods rank within the 10% least income deprived areas in England, 111 neighbourhoods, in particular in North Manchester, fall into the most income deprived 10% (MHCLG, 2019). Per capita income tends to be closely linked to levels of consumption, which is therefore likely to show huge disparities (Harris et al., 2020). We cannot address climate change and carbon emissions in the city without a nuanced look at inequality and privilege. A particular focus needs to be on the super-rich: not only are they responsible for the largest share of emissions, they are also least likely to change their behaviour in response to state intervention as they can afford to continue polluting (Otto, Kim, Dubrovsky, & Lucht, 2019). This is where ambitious interventions are needed. The consumption-based approach helps us place the burden of reduction onto those whose responsibility is highest while ensuring that all those who need to consume can.

## 4) Society is open to change.

While policy makers need to accept the scale of the climate challenge and be prepared to take difficult action on carbon emissions, they cannot make these changes alone. Large scale societal transformations such as the one required here “[need] to be underpinned by a clear social mandate and public support” (Howarth et al., 2020, p.1108). A social mandate refers to broad societal backing for decision-makers as they take action to protect collective well-being, to legitimise both outcomes and processes. This is particularly pertinent for the case of consumption. Our consumption patterns are bound to our identity, our culture and our outlook onto the world, and behaviours around consumption are notoriously hard to influence through outside pressure. On the surface, therefore, it would appear that changing these practices might be met with resistance.

Recent experience, however, points to the opposite: people are open to and ready for change. Before the COVID-19 pandemic we saw an unprecedented wave of climate activism around the Fridays for Future and Extinction Rebellion movements, with clear demands for action. The pandemic further demonstrated that large scale behaviour changes are possible across society in the face of a crisis. Rapid response surveys such as a study by the Centre for Climate Change and Social Transformations (2020) reveals substantial changes in behaviours around travel, food, waste and leisure: people working from home, not going on holidays, moving to online shopping and reducing their food waste. Many of these new routines are climate-positive, and the hotspot sections will discuss in more detail how they can be sustained while being mindful of the diversity of personal experience. Just as importantly, however, the pandemic has triggered and accentuated shifts in people’s wider priorities. Concerns about climate change reached a new high during the pandemic (ibid) and in the workshops we found anecdotal evidence of a greater emphasis on health, well-being, community and environment as people reassess what matters to them. These shifts need to be taken seriously within any recovery strategy as they reflect our personal and communal values.

There are a range of tools available to make sure people’s views are heard and considered when decisions are taken, drawing on principles of public engagement, co-production and deliberation (Howarth et al., 2020). Workshop participants further highlighted open access talks and citizen juries as ways for the city to progress its exchange with the public, to establish trust and ensure greater reception of new directions.

## 5) Cities need to emerge as leaders - together.

Cities have a crucial role to play in addressing consumption-based emissions. Particularly those with a service-based economy like Manchester tend to have a high consumption-based carbon footprint, since they consume a lot more than they produce and therefore effectively 'outsource' their emissions. But there are other, more positive reasons too for a spotlight onto cities. Cities are growing in power, they are "in a unique position to mobilise and influence local actors" (Harris, Weinzettel, Bigano, & Källmén, 2020, p.11) and take swift action within their constituency (Ottelin et al., 2019). This agency will gain in importance within the COVID-19 recovery as the impact of the pandemic will be differentiated across areas and competition for national resources will be fierce.

Despite the recommendations of the UK Climate Assembly (2020) there has been a lack of emphasis on consumption in climate policy from the national government, which necessitates action from the bottom up. It makes sense for cities to do this in a networked way: to share expertise, build capacity and act together. Otherwise there is a risk of "a race to the bottom" (Hepburn et al., 2020) in which individual cities become disadvantaged by their climate action, or carbon-intensive activities are simply displaced elsewhere (such as maybe the case for aviation). This highlights the role of networks such as C40 or the Covenant of Mayors, as well as potential new alliances within the UK.

Within the city, partnerships and stakeholder involvement is just as important. Building action coalitions can enable interventions that are sensitive to the specific local context, while allowing difficult decisions to be made in a participative way (Markard & Rosenbloom, 2020). But there was also a clear sense in the workshops that leadership from the City Council, alongside other major institutions such as the Universities and hospitals, is both expected and desired. Taking action on decarbonising consumption through procurement guidelines, the planning system and choices around catering and business travel, for example, would encourage others to follow suit and would send a strong message of action and commitment. Clear goals and indicators could further help build a path of transparency, with the ability to hold decision-makers to account (Kuzemko et al., 2020).

"It will help everyone else along the journey if they can see that [the city] are doing it."

Participant, Workshop 14 Oct 2020

## 6) Be bold - start where things are difficult.

"We always **tend to start where it's easiest** and work to where it's hardest. I think sometimes there are benefits to doing the reverse, **trying things out where it's hardest already.**"

Participant, Workshop 14 Oct 2020

There is a tendency for projects to start in 'easy' locations: those with existing features that provide the most immediate route to success, with active community groups that lend support or those where impact is highly visible. On the surface, this may appear a wise decision - it gives policy makers and stakeholders the opportunity to demonstrate the feasibility of projects and prove return of investment. But workshop participants challenged this thinking: it tends to place innovative ideas into the same, often more privileged locations. Why not start a cycling scheme in an area where few people currently cycle? Promote low carbon food where it is not considered 'trendy'? Approaching a project from a more challenging angle may mean taking some risks but can lead to greater payoffs. It allows for much deeper learning to take place which can then be rolled out to many other sites, rather than being bound to a particular set of conditions. It also makes a clear statement about inclusion as a priority, by bringing benefits and innovation to communities that are marginalised or left behind. Infrastructure and resources should be a lever with which to bring low carbon culture into being, particularly where structural inequality has so far prevented this from happening. It is a chance for the city to build trust with communities, form new partnerships and make a difference.

To put this into practice, workshop participants flagged up experimentation as a useful tool: give new ideas a go on a small scale to build support and learn how they can work. Demonstration projects and trials allow new infrastructure or regulation to be tested in practice. They can bring together stakeholders in a focused discussion, allow a detailed evaluation of impacts and make room for iteration and improvements. There is an established history of experimental approaches in the context of climate change adaptation, which ties together observation and iterative processes with broad stakeholder coalition building (Voytenko, McCormick, Evans, & Schliwa, 2016). The disruption caused by COVID-19 provides an opportunity to be bold and to apply these principles to hotspots of consumption-based emissions.

# **TACKLING CONSUMPTION EMISSIONS HOTSPOTS**

**Low-hanging fruit and ambitious  
actions**

# TACKLING CONSUMPTION EMISSIONS

## HOTSPOTS

The following sections take a closer look at five consumption-based emission hotspots for Manchester as identified by the Tyndall Centre and the Manchester Zero Carbon Advisory Group:

1. Food & Drink
2. Construction
3. Waste & Wastewater
4. Other manufactured goods
5. Transport beyond the city.



The sections all follow the same structure: we briefly introduce the hotspot and any changes observed under COVID-19. We then set out possible actions at two levels: ‘Low Hanging Fruit’ are practicable steps that are easy-wins in the drive to decarbonise our consumption. They make use of existing initiatives and should find general support amongst stakeholders. ‘Ambitious Actions’ are more comprehensive plans of action that tie into wider social or economic shifts. They require a strong political will and careful coalition building. But ultimately, this is the level we need to act at to achieve our carbon emission targets and limit global heating. The recommendations are drawn from the ‘Decarbonising Consumption’ workshops in October 2020 in conjunction with the literature. We do not have the scope within this project or report to provide the fine detail of each recommendation. Instead, they should be seen as agenda-setting points for urgent future work by policy makers, organisations and researchers. The illustrations are details from the visual minutes produced at the workshops and they reflect some of the key messages.

## Food and Drink

Carbon emissions from food and drink are a category mostly missed out by production-based carbon accounting for cities, as many of these emissions occur outside of a city's boundaries. In 2017, food was the biggest source of urban consumption-based emissions for cities in the C40 network. The average for the C40 cities suggests that for Manchester it accounts for 25% of consumption emissions (Jones, 2019). Three quarters of these stem from animal-based food, highlighting the importance of what we choose to eat (C40, Arup, & University of Leeds, 2019). When it comes to food, interventions at consumption level are likely to have a much more far-reaching effect than what can be achieved by producers (Poore & Nemecek, 2018), making it a priority area for consumption-targeted climate action.



Our consumption of food and drink has seen sweeping changes during the pandemic. In a recent study based on You Gov data (The RSA, 2020), 42% of people say the pandemic made them value food as an essential. More than 38% report that they are cooking more from scratch in response to lockdowns and COVID-19 restrictions. Social entanglements around food have changed too: while we could not meet friends and families for meals out, more people have started sharing food or shopping with neighbours. However, it is important to note that experiences have varied greatly, and food insecurity remains a huge problem: in November, almost one in five people reported cutting down on meals for financial reason, rising to 38% in the age group 16-24 (IPSOS Mori & Food Standards Agency, 2020). Food consumption is highly unequal, and access and affordability need to be at the heart of climate interventions. Our choices of what we eat and drink are also very personal and rooted in our culture and identity. We need to be mindful of these deep connections when working towards lowering our climate impact.



## Low Hanging Fruit

**Promoting low carbon food within organisations and public institutions:** Reducing red meat consumption is by far the most impactful intervention with regards to food carbon emissions, capable of cutting up to half of total emissions (Poore & Nemecek, 2018). As a society we need to embrace plant-based food as the foundation of our diet rather than a lifestyle choice. An easy way to work towards this goal within Manchester is to shift institutional and business catering towards a vegetarian or vegan menu, with red meat as a high value extra. There are already examples of this, such as individual institutes within the University of Manchester which use vegan event catering by default. But there is much scope for the city to take an active role in promoting this shift. It provides clear co-benefits around health and financial savings and would support the large number of small independent vegetarian/vegan catering businesses in Manchester who are struggling as a result of COVID-19.

**Low carbon school meals and food education:** School meals are a further point of intervention. Low carbon meals overlap with other priorities around child nutrition and well-being, and previous campaigns, such as the promotion of healthier food choices in school canteens, have already proven effective. Schools also offer scope for a holistic approach that includes food education alongside the provision of more climate-friendly meals, with multiplier effects as children take that learning home. There is an opportunity for the city to champion schemes such as Food for Life, which supports schools to deliver healthier and more sustainable meals. Citing examples from Berlin, workshop participants argued that this could be extended by building partnerships between schools and community gardens or local growers.

**Local recovery programs to support low carbon food:** A third avenue for action concerns the general availability of low carbon food choices. In a study by Hoolohan, McLachlan, & Mander (2018), participants identified the need for more home delivery options for local produce and a greater emphasis on sustainable food offers on the high street. With the hospitality sector hit hard by COVID-19, there is an opportunity here to promote low carbon choices as part of local recovery support packages.

But now with COVID, it might be an opportunity for policymakers to be a bit braver and to say: if we're going to provide support to your small business, we want you to ascribe to a certain set of values that are important for us, as a city.

Participant, Workshop 14 Oct 2020

Workshop participants highlighted that public financial help given to struggling businesses should incentivise the delivery of shared public goods such as emissions reductions. This might include changes in menus to include more vegan/vegetarian options or more seasonal products. It could also entail a commitment to working with local suppliers to benefit the city's economy.

**Local planting efforts:** Finally, workshop participants highlighted the importance of local food in reducing food miles, and the potential for food cultivation within the city, allotments, community orchards and public spaces. While such initiatives will not feed the whole city, they do contribute to a more accessible sustainable food culture and a greater understanding of local and seasonal produce. Work on the Incredible Edible initiative in Todmorden highlights its contribution to a more just food system that allows anyone to pick fresh produce, and its role in education and as a green tourist attraction (Hardman et al., 2019).

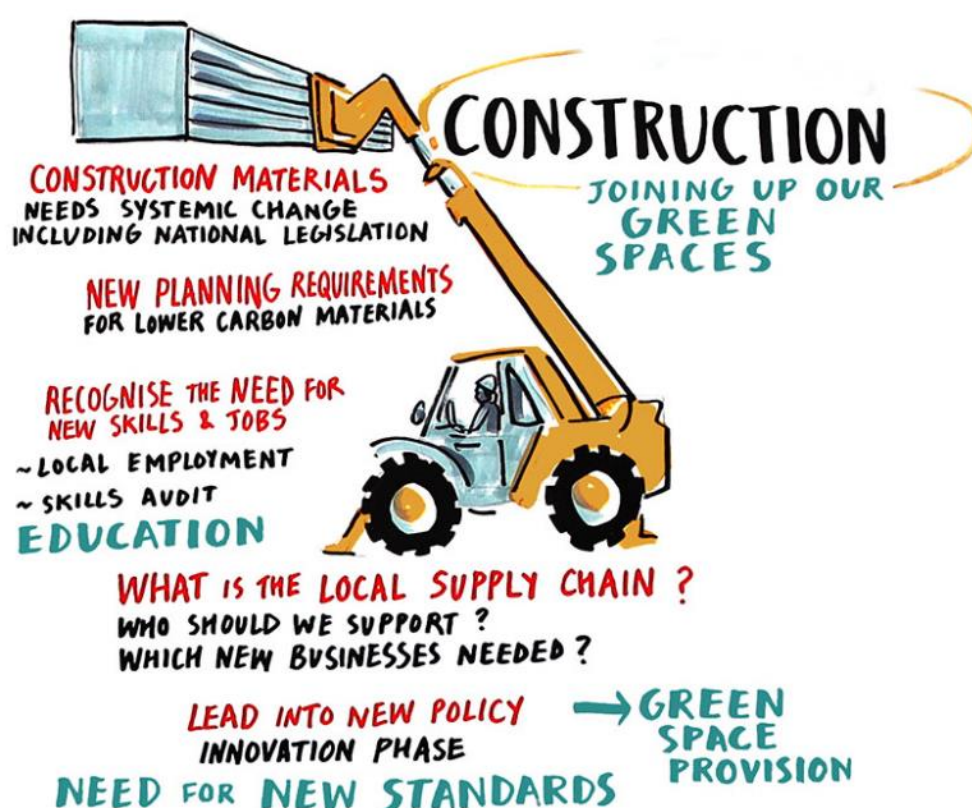
## Ambitious Actions

**Support a wider low carbon food culture:** The actions above can help set examples, build up learning and open the door for wider changes in our everyday practices. But ultimately, a shift in food consumption behaviours needs to be underpinned by a joint-up holistic approach. The role of the city here is to leverage a range of policy and engagement tools at its disposal. A useful start would be to follow the example of 14 cities world-wide and adopt the C40 Good Food Cities Declaration. The Declaration commits cities to working towards a 'Planetary Health Diet' by 2030, addressing areas such as meat consumption, food waste and procurement within their boundaries (C40, 2019). To achieve this, they are required to develop an action plan with their local stakeholders and incorporate this into their Climate Action Plans. This collective approach, both within the city and across network members, is important as it provides a basis for meaningful and equitable action. There are clear co-benefits beyond the climate too. A culture based around eating less red meat and more vegetables and fruit would reduce diseases such as cancer, heart disease, diabetes and stroke – saving 170,000 deaths amongst the C40 cities each year (C40 et al., 2019).

**Re-thinking work-life priorities to enable more sustainable food practices:** In the study on low carbon food choices mentioned above (Hoolohan et al., 2018), participants talked about their desire to eat more consciously and spend more time cooking, but found it difficult to reconcile this with busy work lives. They therefore cited "higher wages/lower living costs" and "fewer working hours/job shares" as requirements for more sustainable food practices (ibid, p.99). Other research echoes the role of work-life patterns in improving environmental outcomes (Wiedenhofer, Smetschka, Akenji, Jalas, & Haberl, 2018) and similar points were raised in the workshops. This prompts us to think big and consider initiatives such as a Universal Basic Income (UBI) in which an unconditional regular payment is made to all citizens to provide basic security. As well as tackling problems around means-tested benefits, UBI "could break the link between work and consumption" (Maslin & Lewis, 2019) and slow the accelerating treadmill of production, consumption and growth. Implementing a UBI trial provides an alternative pathway for the city to address job losses and deprivation caused by COVID-19 while still putting the climate first. In October 2020, a cross-party group of MPs called on the government to allow councils to run such pilot schemes (UBILab, 2020). As a forward-thinking city, Manchester could take bold action and emerge as a national leader.

## Construction

Emissions linked to the production of basic construction materials like steel and cement constitute around 25% of global carbon emissions, mostly due to the chemical processes and the large amounts of energy required in their production (Pollitt, Neuhoff, & Lin, 2020). The scope for reducing emissions in the production process is limited, which puts the spotlight on other parts of the value chain including the demand for carbon-intensive materials. At national level, embodied carbon emissions from construction activities are relatively low compared to other hotspots. However, as the Tyndall report points out, there are likely to be regional variations based on the volume of construction (Jones, 2019), which suggests a higher share for Manchester with its large scale building and development projects.



The construction industry has a prime role within the post-COVID-19 recovery. In its report in June 2020, the Committee on Climate Change (2020, p.15) identified investment in “low-carbon retrofits and buildings that are fit for the future” as a clear priority, with the opportunity for reskilling and job creation. Alongside the focus on retrofit, this includes efforts to limit the carbon emissions embodied in new construction projects before they are passed over to any residents or users. Material efficiency savings could also reduce the cost of new builds. The C40 have argued that, in using materials efficiently and avoiding new

construction, cities like London could save £8 billion over the next five years which could instead be spent on retrofitting (C40 et al., 2020).

## Low Hanging Fruit

**Intervening across the life cycle of construction materials:** The consumption-based perspective urges us to think through the whole life cycle of a product or material with regards to its carbon emissions. In construction, recycled aggregates can work as well as new material for specific applications. They address issues of resource availability and can lower the carbon footprint as much or more than greener production processes. However, a key determinant for the value and use of recycled materials is the quality of the source and the way it is managed along its recycling journey. Partnerships between demolition companies, recycling centres and cement factories, for example, have been shown to be beneficial here (Favier, De Wolf, Scrivener, & Habert, 2018). Cities have a role to play in managing such cooperation to make recycling more attractive and easier to implement in order to improve the quality of the end product.

**Encourage experiments to increase acceptance of low carbon construction:** The issue with reducing embodied carbon in construction is not primarily a technological one as alternative materials and processes exist. The obstacles tend to be related to the low acceptance of these innovations based on a lack of knowledge, missing supply chains or higher costs. A strong suggestion from the workshop was the need for an innovation phase supported by the city, which allows developers, construction businesses and other stakeholders to explore these new technologies.

"It's not necessarily about driving a massive change from the start, but rather to **enable businesses to interact with new technologies** and start **seeing how these interact with current practices.**"

Participant, Workshop 14 Oct 2020

Such experimental steps might include show units within larger developments which employ innovative features and can function as demonstration sites. Another pathway is to set a requirement for a certain percentage of low-carbon materials within a construction project, which forces companies to engage with the options available and form new working partnerships. Such small steps can then accumulate and drive a sector-wide change. They can also provide the evidence-base for wider regulatory changes.

**New planning and procurement rules to include carbon indicators:** Workshop participants strongly felt that currently there is too little pressure on developers, constructors and commissioning bodies to take steps towards low carbon construction. Given the emission reductions required to achieve Manchester's targets, stricter standards need to become anchored in the

planning system now as they take time to show impact. A first question should be whether new construction is needed at all. The large scale of new builds in Manchester is cause for concern. Cutting down

"It's rampant apathy."

Participant, Workshop 14 Oct 2020

demolition rates is an important step towards lowering the construction carbon footprint by reducing the need for raw materials (Favier et al., 2018). Moreover, we need to interrogate what is being constructed and whether it enables the low carbon behaviours we need to see adopted across the city (Broer & Titheridge, 2010). The planning system needs to scrutinise these decisions and implement new directives around zero carbon building. From a procurement perspective, purchasing criteria need to be weighted towards carbon efficiency. Commissioning bodies such as housing associations need tools to opt for low carbon options even when they are more costly in the short-term, re-orienting the system towards resilience and long-term benefits. Standards such as those set by the UK Green Building Council can act as a useful guide here.

## Ambition Actions

**Create local base of low-carbon skills, knowledge and resources:** A major obstacle in taking up green innovation in the construction and building industry is a lack of knowledge, skills and providers. Even if money was made available to incentivise low carbon construction, there are currently few people and companies who can deliver such projects. A green building recovery should therefore include a local skills audit: what skills do we currently have in the city and region, what will be needed to lower carbon emissions, and which targeted training and development is required to plug these gaps. To support the local economy the focus should be on building the capacity of local companies to deliver low carbon contracts. This move can be underpinned by the local higher education institutions, if they reorient built environment education towards a societal zero carbon transition (Pelsmakers & Stevenson, 2020). Ultimately such developments could lead to the formation of a manufacturing base in the city region, with a network of suppliers, companies and experts that meet an array of construction needs and a sustainable transport model that may include the Manchester Ship Canal. Further interventions could involve regional awards and certification schemes, making Manchester a leader in green construction innovation.



## Other Manufactured Goods

We are well aware of transport or food as carbon emission hotspots. But it is the category of “other goods and services” which causes the largest share of consumption-based emissions – about 50% according to a study comparing cities across Europe (Harris et al., 2020). This includes emissions from all ‘non-food shopping’ and consumables such as clothing and electronic goods as well as those from public and commercial services. As Manchester imports most of its goods, the consumption-based perspective flags up an important blind spot here that is not captured in production-based accounts. Research further indicates a strong link between income levels and consumption-based emissions as people are able to buy and use more goods. Reducing our consumption of other manufactured goods could also help personal savings - buying fewer clothes, for instance, would save the average person over £500 per year (C40 et al., 2020).



It is too early to say whether the COVID-19 pandemic has significantly altered our relationship with material goods. The messages so far are mixed as a recent report by the Institute for Fiscal Studies (Davenport, Joyce, Rasul, & Waters, 2020) indicates. Job losses and uncertainty about the future mean that people have less income at their disposal, with poorest households hit hardest. An increased emphasis

on intangible and non-material values from health to community may trigger more conscious purchasing. At the same time, purchasing patterns for more affluent households have not declined but shifted towards home-based categories – much of it online. We can also expect a rebound in other sectors: spending on clothing and appearance, for example, quickly returned to 2019 levels after the first lockdown. Thus, in order to lower emissions from these categories in an equitable way, more concerted interventions will be needed.

"Because I'm working from home, I found I was wearing the same clothes all the time. There was no need to dress up to go to the office."

Participant, Workshop 14 Oct 2020

## Low hanging fruit

**Final-mile delivery:** The shift towards online shopping brings to the fore a core logistics problem: last mile delivery, the final step of the journey in which a good arrives at a customer's door. Not only is it often the most expensive and slowest part of online delivery and therefore a concern for retailers, it also has a huge carbon impact as it is dependent on vans driving around the city. An increasingly large proportion of local traffic is made up of delivery vehicles, with prediction showing a further increase of 36% until 2030 (World Economic Forum, 2020). There is a call to action here for the city. Greater Manchester needs to accelerate the creation of a Clean Air Zone which levies a charge on polluting commercial vehicles. At the same time, the city should work with innovative businesses to provide low carbon alternatives. A report by the Energy Savings Trust (2020) gives guidance to local authorities on 'electrifying the last mile' and businesses such as Last Mile Manchester have paved the way in (e)-cycle deliveries. There is also a huge opportunity here to make shopping 'final mile only'. Services like ShopAppy and Chorlton Bike Deliveries combine the offers of local independent traders into one central point and specialise in local delivery networks, reducing the carbon impact whilst supporting a struggling high street.

"As we stop going to things, things come to us."

Participant, Workshop 14 Oct 2020



**Rethinking advertising:** To re-evaluate our relationship with material goods and ultimately reduce our consumption, we need to think holistically about the structures that underpin our consumer economy. Much of our consumption choices are influenced by advertising, which reflects values that are prevalent in society but which also continuously seeks to create demand for new products. As it stands, "the advertising industry indirectly contributes to climate and ecological degradation through its encouragement of materialistic values and goals [and] the consumption-driving work & spend cycle" (Kasser, 2020, p.7). We need to place responsibility on advertisers to use their influence for good. The city has limited scope for action here, but it does have some power: it should review what kinds of products are advertised in prominent spaces across the city, in areas close to schools and near public institutions, and create directives that restrict publicity for carbon-intensive goods.

## Ambitious Actions

**An ecologically viable economy and society:** However thoroughly applied, the low-hanging fruit interventions above will not significantly address carbon emissions from the consumption of goods and services in Manchester. Our consumer economy and culture is predicated on the notion of growth driven by consumption and spending. What the COVID-19 pandemic has done is to show that things could be otherwise: we do not have to buy new things just because we have always done so – we can reduce and reuse. We now need to apply this thinking to larger systems that we have taken for granted. Alternative models such as the steady state approach argue for a socially and ecologically viable economy that “is able to function without growing in overall size” (Steady State Manchester, 2020, p.13). Instead of growth it focuses on improvements to quality of life. These views are gaining political traction, with an All-Party Parliamentary Group outlining the key elements of a post-growth recovery in a letter to the Chancellor in July (APPG Limits to Growth, 2020). Recommendations made by Steady State Manchester include the re-localisation of the economy and a focus on local institutions as employers and purchasers, as well as a re-centring of well-being as a key performance indicator.

"Progress within the city doesn't necessarily have to be predicated on GDP growth."

Participant, Workshop 14 Oct 2020





## Waste & Wastewater

"The more you grow the amount of consumption, the more [waste] infrastructure you need. You can **make do with less infrastructure if you aren't growing consumption.**"

Participant, Workshop 14 Oct 2020

Waste is the endpoint of all of our consumption: the more we consume, the more we throw away, be it in terms of food, construction waste or other goods. Cities are particular culprits when it comes to consumerism, materialist lifestyles and throw-away culture. Reducing carbon emissions from waste will "require cities to reduce the acquisition of new products by citizens in order to reduce waste generation at the source as well as increasing recycling rates" (Schröder et al., 2019, p.117). Wastewater too generates consumption-based emissions that need to be addressed. These include emissions arising from treatment such as chemical manufacture, construction activity and sludge disposed to landfill and agriculture (Ofwat, 2010), and are similarly tied to the volume of water used.



The COVID-19 pandemic has altered waste flows and types. While the overall level of waste across Greater Manchester slightly decreased between April and June 2020 compared to the previous year, the recycling rate also went down from 53% to 48% (GMCA, 2020). A report to the Neighbourhoods and Environment Scrutiny Committee in October sheds some light on this development. It documents a "significant increase to household waste arisings" (Section 3.1) for the City of Manchester, with an increase in residual waste of 30% at the beginning of the pandemic, and 15% in August compared to the same months in 2019. The reasons cited for this growth are more food and drink being consumed at home, more people

working from home and fewer young people attending educational institutions (Neighbourhoods and Environment Scrutiny Committee, 2020). What we see, therefore, is a shift in waste production from a range of public and business settings into the home. This puts a much greater responsibility on households to achieve city-wide waste reduction and recycling targets, and the lower recycling and higher residual waste levels indicate difficulties here. Gaps remain in people's understanding of recycling or their ability to put it into practice, for example with a lack of space to put separate bins or the lack of accessible recycling facilities in apartments. The pandemic places a new urgency on these challenges. More widely, it urges us to think of waste as part of our consumption and to aim for a reduction to tackle the root of the problem.

### **Low-hanging fruit:**

**Tackling food waste by supporting innovative businesses:** Food waste has been identified as a key source of carbon emissions: in the case of Bristol it is estimated that eliminating the city's food waste is equivalent to a £3billion investment into green production in terms of emission reductions (Millward-Hopkins et al., 2017). Similar gains are to be expected for Manchester. More careful meal and shop planning during COVID-19 restrictions have had a positive influence on food waste and should be promoted (Principato, Secondi, Cicatiello, & Mattia, 2020). But workshop participants pointed to the need to think about food waste more systemically. A key suggestion was to expand local networks that save and re-distribute surplus food, building on the work of organisations such as Cracking Good Food and FareShare. By providing funding, employment schemes and council support to small businesses doing this work, the city can achieve both its carbon reduction commitments and strengthen its local social enterprise sector. Furthermore, by avoiding household food waste, the average person could save around £200 a year (C40 et al., 2020).

**Reducing the need for wastewater treatment:** Emissions from wastewater are tied to the amount of water that requires treatment and the level to which it is treated. A major factor here is the volume of water used by consumers. Although water saving campaigns are a staple in environmental education, they tend to say little about wastewater treatment and its role in climate change. New educational resources which demonstrate this connection are required here, as is further support for efficiency improvements at household and business level. Another approach involves finding ways to reduce the need for highly treated water in the supply, for example by fine-tuning treatment standards, using non-potable water for industrial or irrigation use and identifying alternative water sources such as greywater recycling or rainwater harvesting (CIWEM, 2013). These provide a range of options for the city to promote a more sustainable relationship with (waste) water with an explicit link to carbon emissions and low carbon living.



### **Ambitious Actions:**

**Moving towards a circular economy:** To fully achieve our climate targets we need to rethink the linear extractive system which underlies the global economy and move towards a circular model. The circular economy is built on three principles: design waste and pollution out of the system, keep products and materials in use and regenerate natural systems (Ellen MacArthurFoundation, 2020b). Where waste occurs it is radically re-conceptualised as “a resource that can provide incomes, improves local urban environments and reduces dependency on external inputs” (Schröder et al., 2019, p.117). The circular economy model is not a waste management strategy. It is an integrative approach that addresses transboundary, system-level challenges but feeds through all spatial scales and sectors, from food to construction. Cities should adopt circular economy principles within their climate change and recovery frameworks and support businesses and organisations in doing the same, with a view to promote alternative business models and wider co-benefits. Taking this view allows to build synergy across emission hotspots whilst also identifying new circular investment opportunities (Ellen MacArthurFoundation, 2020).

### **Creating infrastructure for better waste management:**

"That is a recommendation for the city authorities: the waste framework we have and the facilities in the region to handle it are not good enough to help us tackle climate change."

Participant, Workshop 14 Oct 2020

During the workshop, waste experts pointed to particular infrastructural issues around waste in Manchester. There are limits to what local plants can recycle, which puts increased pressure on households and businesses to separate their waste. Contamination is an ongoing problem, and recycling rates for the City of Manchester in particular remain low at around 40%, with only marginal increases over the past years and significantly short of the 65% target set for the 2035 by the Government's Strategy for England (Neighbourhoods and Environment Scrutiny Committee, 2020). Much of Manchester's residual waste is burned for energy recovery but incineration has attracted criticism as it releases an average of 1 tonne of CO<sub>2</sub> for every tonne of waste burned (UKWIN, 2019). Introducing change into these systems is difficult as waste infrastructure, such as recycling plants and incinerators, are often built using private finance initiative (PFI) schemes with long running times attached. This creates a lock-in effect. A long-term goal for the city should be to put low carbon management of residual waste at the forefront of any new commissions as the current plants reach the end of their lifespan.

**Putting more responsibility on waste producers:** While there is scope to increase household recycling rates through better information and education, the burden of waste avoidance should not be carried by consumers alone. Producers and retailers need to be pushed to reduce packaging in the first place. An important approach here is the so-called extended producer responsibility (EPR), under which producers are given a significant responsibility for the treatment or disposal of post-consumer products (OECD, 2020). Workshop participants saw this as an important factor in tackling waste in the city. While the implementation of an EPR approach falls beyond Manchester's immediate scope of influence, a concerted effort by a network of cities such as C40c could have a powerful impact here. As cities shoulder the environmental and financial cost of waste, it is in their interest to align their power and call for stricter legislation at national level.

## Transport Beyond the City

Last but not least, transportation is a priority area for climate action in Manchester, with almost one third of production-based emissions being attributed to transport within the city (Manchester Climate Change Partnership, 2020b). The consumption perspective expands this view to include transport beyond the city's boundaries: the emissions induced outside the city by people from Manchester travelling elsewhere. It is estimated that emissions from car journeys taken by citizens beyond Manchester are equivalent to emissions from all cars within the city (Blakey, 2018). At the same time, the total aviation footprint of Manchester residents in 2019 was 0.20 MtCO<sub>2</sub>, with 88% of this relating to flights taken from Manchester Airport (Manchester Climate Change Partnership, 2020a). Reducing private vehicle use cuts congestion, improves air quality, and promotes active travel (and the health benefits it brings), whilst also releasing land for public green space (C40 et al., 2020). Lowering aviation emissions through reducing use and switching to more sustainable fuels could avoid around £50 million in damages to human health, buildings, infrastructure and agricultural production (C40 et al., 2020).



The transport sector experienced the most drastic change during the COVID-19 lockdown periods, as people worked from home, cancelled holidays and restricted their personal and business travel to the most essential journeys only. In the journeys that did take place, we saw a marked shift in modalities due to social distancing and concerns about infection risks. Statistics on the changes are still patchy but some trends are clear. Between March and June,

passenger numbers on public transport for Greater Manchester dropped by 90-95% (Morris, 2020), and have remained significantly below pre-pandemic levels since. Walking and cycling, on the other hand, are more popular than ever before, with 39% of respondents in the National Travel Survey reporting that they walk and cycle more, and expect to continue to do so (Department for Transport, 2020a). However, there is a concern about an increased reliance on cars as car journeys quickly bounce to almost pre-lockdown levels as soon as travel restrictions ease (Department for Transport, 2020b). Looking at air travel, passenger numbers fell by 60% across 2020 – but this could easily bounce back post-COVID (Air Transport Bureau, 2020). Some of these shifts clearly align with actions required to lower our carbon emissions, but others pose new challenges.

## Low-Hanging Fruit

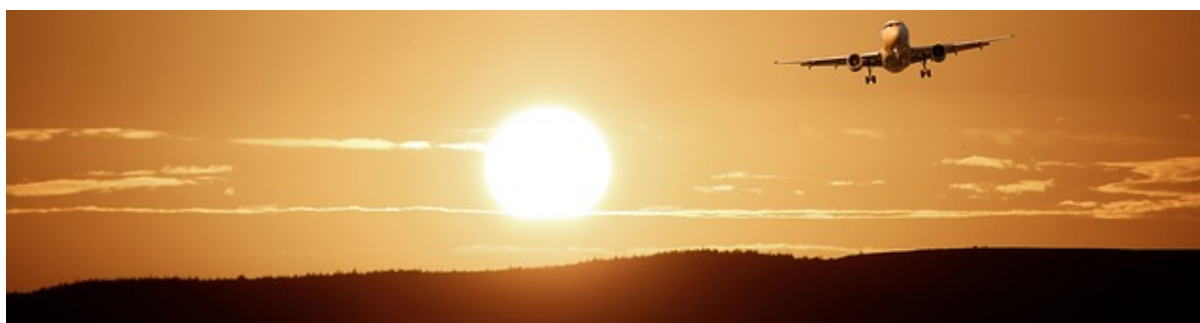
**Sustain & accelerate active travel schemes:** Active travel has been a beneficiary of the mobility changes during the pandemic. To sustain these changes, the city should extend its efforts to increase provisions for cycling and walking such as the Beelines, the Active Neighbourhood and Low Traffic Neighbourhood projects. Discussions in the workshop identified further practical interventions: more cycle parking and lighting would increase convenience and encourage new cyclists and walkers to continue to use these modes of transport in the longer run. An important consideration is also how routes connect to the wider region by enabling points of integration with national cycle infrastructure for example.

**Improve integration between cycling and the Metrolink:** Transport beyond the city will often involve a mix of modalities (such as walking or cycling to a train station or tram stop). These intersections currently lack full integration and therefore pose challenges for low carbon transport. An important step here is to allow bikes and other cycles on Metrolink to facilitate longer journeys beyond the city. As stated in a petition by WalkRideGM (2019), this is a quick win solution that works well across many cities in the UK and Europe. Workshop participants noted that the current reduction in passenger numbers on Metrolink provides the ideal setting for a fully monitored trial: allowing cycles on trams along a few routes for a limited amount of time to assess feasibility, identify barriers and develop public support.

**Encouraging large institutions to rethink their business travel practices:** The travel restrictions have altered the way many of us work. Online platforms have become the norm for everything from team meetings to job interviews and conferences. While this has created new issues around digital access and the blurring of work and home life, it does open up avenues to reduce non-essential business travel and commutes. Institutions and businesses should be encouraged to reflect on their travel practices post-COVID, allowing for more flexible work patterns, choosing lower-carbon transport options or running virtual events. Early signs indicate that businesses and organisations are indeed becoming more reflective about the value of travel, in terms of its specific benefits and its wider environmental costs (McCulloch, 2020).

## Ambitious Actions

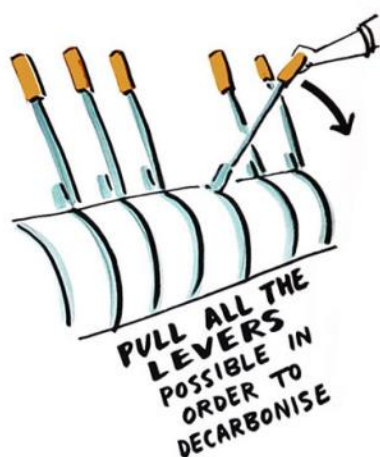
**Addressing travel privileges and inequalities:** Workshop participants referred to Manchester Airport as “the elephant in the room”: an important economic hub for the region but also a consumption-based emissions hotspot. Manchester Airport’s ground operations are now carbon neutral, and the airport aims to become zero net carbon by 2038 by cutting remaining ground emissions and eliminating the need for offsetting. But flights themselves remain a huge issue, meaning aviation features heavily in the city’s consumption-based emissions. 88% of citizens aviation emissions come from flights taken from Manchester Airport (Manchester Climate Change Partnership, 2020a). We need to reduce flying but as workshop participants pointed out, how to do this is a question of privilege and social justice. Research shows that the problem lies overwhelmingly with the super-rich, with aviation accounting for more than half of their emissions (Otto et al., 2019). Thus, we need to differentiate between frequent and very occasional flyers. What is more, we should not see the risky practice of carbon offsetting or speculation on future emission removal technologies as a workaround to enable these privileges to persist (Broderick, Blakey, & Paterson, 2020). There are other privileges at play too: who can afford to choose slower, more expensive modes of travel to reduce their carbon footprint, and who might require a car for work and mobility. The role of the city should be to enable fair and affordable low carbon transport, critically assessing its equality dimension and holding providers to account. Making public transport and, where necessary, hire cars accessible and affordable would not only help to address inequities surrounding mobility but also work to near-eliminate any requirement for car ownership.



**Thinking through transport and housing in a holistic way:** Our transport needs are linked to the spatial configurations of where we live and work. The pandemic has given rise to several new patterns here. On the one hand, the upturn in walking and cycling emphasises the benefits of living close to work and amenities, as it avoids lengthy commutes and other journeys by car or public transport. On the other hand, the rise in working from home has led to an ‘escape the city’ thinking which may persist far beyond the pandemic. This puts a focus on different options for re-localisation: promoting mixed developments inspired by the ‘20 minutes neighbourhoods’ (TCPA, 2020) with a shift away from out-of-town retail, or creating satellite hubs and offices for large institutions in popular commuter towns. Most importantly, it emphasises the importance of a holistic assessment of the carbon impact in the city to make the most beneficial decisions.

# CONCLUSION

In order for Manchester to become a holistically zero carbon city, it needs to pay attention to and reduce its consumption-based emissions. The consumption perspective flags up blind spots not considered in production-based accounts and it highlights the city's interconnected role in global efforts to reduce carbon emissions and limit global warming. The COVID-19 pandemic has altered the context in which Manchester's climate goals are delivered. It brings a host of new pressures, but it has also unsettled existing practices and assumptions, demonstrating that concerted effort is possible in the face of a crisis. This learning should be cultivated to avoid a return to previous mistakes and build a truly low carbon and socially just recovery.



This report has outlined an agenda for action around consumption-based emissions in Manchester in the recovery from COVID-19. Even though we do not yet have the data to introduce a detailed carbon budget and targets around consumption, we know what we need to do. The expertise amongst citizens, organisations and academics in the city, alongside the wider literature, points to clear priorities for tackling the five emission hotspots. There may be some quick wins along the way but ultimately, we need an ambitious programme of change with regards to the way we live, work and think to meet our climate targets.

What needs to happen next is for these broad recommendations to be taken up, developed and operationalised. This involves researchers who should apply their critical thinking to the systems and principles that govern the city (and more widely, the country and planet). It requires policy makers to champion forward-thinking, comprehensive action and to provide the institutional and strategic framework for interventions to take place. There will be a need to build coalitions among various stakeholders, involving local communities, interest groups, businesses and organisations, to help formulate a holistic vision of a zero carbon city including both production and consumption. Finally, it will take all of these joint efforts to put changes into practice. Our hope is that this process will build on the methods of engagement and open dialogue that underpinned this exploratory work. Participation will be the key for a recovery based on zero carbon and social justice. As an innovative city, Manchester has the ability to enact real change and inspire others to follow its lead.



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