Incorporating Food into Manchester's Climate Change Response

PART ONE: WHY MANCHESTER NEEDS A SUSTAINABLE FOOD MISSION TO SUPPORT A GREEN AND JUST RECOVERY FROM COVID-19

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August 2021

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ACKNOWLEDGEMENTS

The authors would like to thank the following for their input:

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Ms Jemma Hynes, FoodSync

Dr Adrian Morley, Faculty of Business and Law, Manchester Metropolitan University

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This project has been funded by the ESRC Impact Acceleration Account: COVID-19 Rapid Response Fund.

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

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Summary

Food is a foundational aspect of our daily lives, and the food provisioning systems which deliver our meals from farm to fork have profound social, economic and environmental impacts. Through its efforts to feed the nation, the UK's food system generates revenues of about £121 billion per year (Hasnain et al., 2020), and constitutes the UK's largest manufacturing sector (FDF, 2021). Although Manchester produces relatively little food, the central importance of food retail and processing for the City's economy has been highlighted in the *Our Manchester Industrial Strategy*. Yet the contribution of the food sector to the national and local economy comes at a significant cost to the climate. Despite the relatively low levels of food production **in Manchester, the *consumption* of food and drink has been estimated to account for 16% of the City's carbon footprint** (MCCA, 2021). This is significant, and food has been identified as a hotspot for the City's consumption-based (Scope 3) emissions (Jones, 2019; Wendler & Blakey, 2021). In addition to its climate impacts, the current food system sustains food poverty in the form of unequal access to healthy, affordable, convenient, and appropriate meals for all (Dimbleby et al., 2020). In particular, Manchester and Greater Manchester have been recognised nationally as high risk areas for food poverty (MCC & STC, 2020). These findings indicate that a transition to more sustainable systems of food production, distribution and consumption should be central to the City's Green and Just Recovery to the COVID-19 pandemic. While the challenge is significant, driving a shift to a **more sustainable food system will produce multiple benefits for our citizens, support our commitment to becoming a zero-carbon city by 2038, and contribute toward the UK's fulfilment of Paris Agreement obligations**.

Stimulating transition toward a more sustainable food system in Manchester is challenging for many reasons. These include the lack of attention to food systems within local, national and international sustainability or innovation policies to date. For example, the *Greater Manchester Local Industrial Strategy* (HM Government, 2019), developed in appreciation of global trajectories of change, makes no direct reference to food systems, either in discussions of decarbonisation or more broadly in the report. Similarly, food systems are absent from the national government's 10-Point Green Recovery Plan to the COVID-19 pandemic. Now is the time to address this attention deficit, by both strengthening the position of food in the upcoming Manchester Climate Change Framework refresh 2021, and building on the networking capacity and collaborative initiatives enabled through the Manchester Food Board (MFB). The evidence in this report supports the position taken in the Manchester Food Board's 2020 Policy Statement, which highlights the need for food system innovation in delivering a sustainable food system for Manchester, planning Manchester's green and just recovery from COVID-19, and achieving net-zero emissions twelve years ahead of the national target (MFB, 2020).

'COVID-19, painful though it is, could pale into insignificance compared to the turbulence created by climate change and the collapse in biodiversity' (Henry Dimbleby, Independent Lead of the National Food Strategy, 2020).

This report addresses the inclusion of food systems in Manchester's sustainability policymaking through two parts. **Part One** outlines **why** food system innovation toward more sustainable food provision in Manchester should be a key part of a green and just recovery to the COVID-19 pandemic, paving the way for suggestions of **how** this can be achieved in Part Two. More specifically, Part One aims to:

1. Present evidence highlighting **key problem areas** of the current, unsustainable food system in Manchester;
2. Introduce a **Sustainable Food Mission** to encourage cross-sectoral collaboration, thereby ensuring the best outcomes for Manchester citizens and the environmental implications of the city's food consumption;
3. Suggest that the development and adoption of a mission-led approach would **align motivation and action across public and private domains** to support delivery on Sustainable Food; and
4. Highlight the **multiple co-benefits** in domains of environmental impact, health, well-being and the local economy which can accompany a Sustainable Food Mission.

The Key Problem Areas

Part One identifies four key problem areas to be tackled in order to transition Manchester's food system towards more sustainable and equitable forms of provisioning. The four areas identified were selected for their prominence within existing analyses of food system unsustainability, and they are: (1) Food Waste; (2) Meat Consumption; (3) Single Use Plastic; and (4) Food Insecurity. Principal considerations for each area are summarised below:

1 Food Waste

It is estimated that **one-third** of all food produced globally is lost or wasted (FAO, 2021), and that unconsumed food constitutes **8-10%** of global GHG emissions (UNEP, 2021b).

Total food waste in the **UK** post-farm gate amounts to about **9.5 million tonnes**, of which **70%** consists of **edible food** parts (WRAP, 2020b).

UK households contribute the **largest share** of food waste post-farm gate (70%) (Ibid).

2 Meat Consumption

The production of animal proteins contributes approximately **58% of global food emissions** and uses 83% of the world's farmland (Poore & Nemecek, 2018).

The **UK Climate Change Committee** advocates a 20% reduction in beef, lamb and dairy consumption per person by 2050 in order for the UK to achieve net-zero emissions (CCC, 2020).

Dietary guidelines in the UK, such as Public Health England's Eatwell Guide, advocate **reducing consumption** of red and processed meats while increasing plant-based foods (UKHACC, 2020).

3 Single-Use Plastic

10 UK supermarkets account for over **810,000 tonnes** of single-use plastic placed on the market each year (EIA & Greenpeace, 2018).

Food and drink packaging is among the most commonly occurring **marine litter** items in Europe (IEEP, 2018)

The UK Plastics Pact (led by sustainability charity WRAP) aims to create a circular economy for plastics and eliminate all single use plastic by 2025 (WRAP, 2020f).

4 Food Insecurity

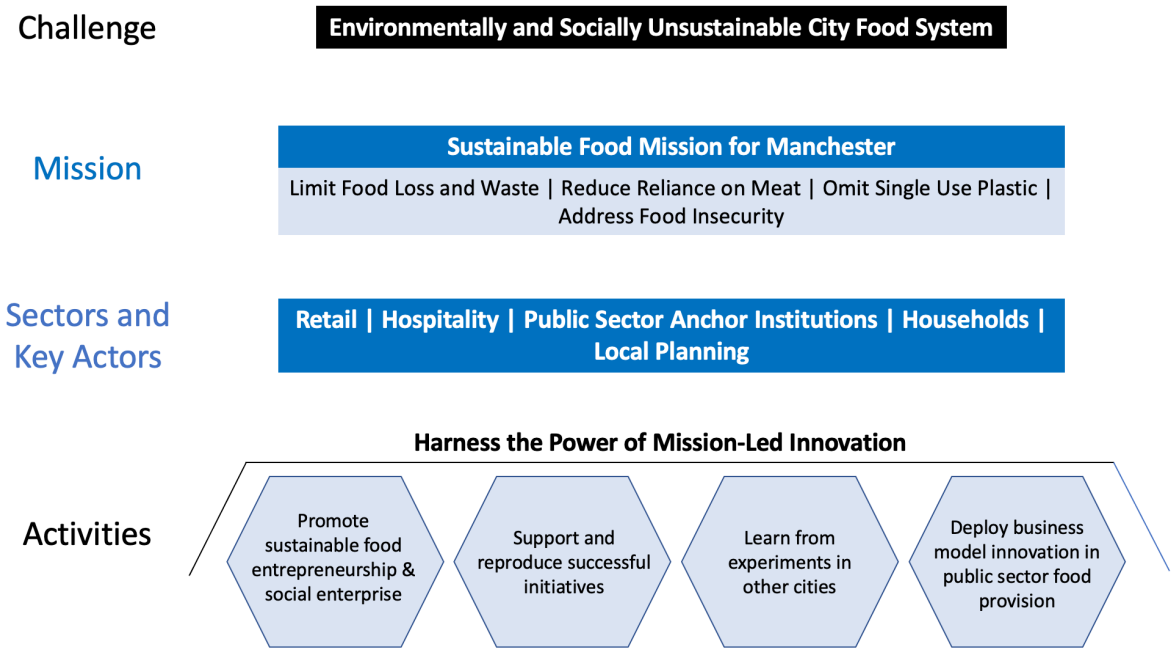
Food security exists when 'all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food' (FAO, 1996).

Manchester has been recognised nationally as a high risk area for food insecurity, with 4.1% of the population at risk (MCC & STC, 2020).

In England in 2018, 10% of adults experienced marginal food insecurity, with an additional 10% experiencing moderate or severe food insecurity (ENUF, 2021)

A Sustainable Food Mission

The problem areas noted above are affected by systemic drivers that can operate from both within and beyond the food system. In order to respond effectively to these systemic challenges, it is argued that a collaborative, multi-sectoral response is needed in the form of a mission-led innovation strategy. Missions have been applied successfully in multiple areas of public policymaking (EC, 2018), and they are the guiding methodology in local strategies such as the *Greater Manchester Local Industrial Strategy* (HM Government, 2019) and the *Five-Year Environment Plan for Greater Manchester* (GMCA, 2019). Our report builds on this approach to suggest that, by adopting a *Sustainable Food Mission*, the current fragmented initiatives to green food provisioning and improve food access in Manchester can be integrated into a more coordinated programme of transformation across public and private spheres. An overview of this Mission is presented below.



'Climate change cannot be fought by the energy sector alone… A mission-oriented approach uses specific challenges to stimulate innovation across sectors' (Mazzucato, 2017: p.3, p.11).

The Co-benefits of a Sustainable Food Mission

The significant economic and social co-benefits that can extend from food system transformation highlight why this endeavour should be central to the City's Green and Just COVID-19 Recovery. Across industries, investment in green stimulus measures has been shown to lead to strong fiscal multipliers and substantially enhanced returns (Shuckburgh et al., 2020). Such effects can be particularly pronounced in the food sector, due both to the sector's economic importance and its direct impacts on health and wellbeing. Responsible for the employment of 4.3 million UK workers (Hasnain et al., 2020), the food sector carries great potential for green job creation. Also, food has been described by the EAT-Lancet Commission as '**the single strongest lever to optimise human health and environmental sustainability on Earth**' (Willett et al., 2019b: p.5). Part One of this report will present data and ideas indicating that a Sustainable Food Mission can yield significant co-benefits for Manchester's local economy, and the health and wellbeing of its population.

'From fine dining restaurants to soup kitchens, from farms to supermarket shelves, food has a bearing on many social, cultural, health, and environmental issues. We believe that food is fundamental to Manchester's vision to "build back better".' (Manchester Food Board, 2020: p.1).

The COVID-19 Recovery must include Sustainable Food

In February 2021, the United Nations (UN) Secretary General António Guterres identified climate change as 'the defining issue of our time' in the midst of an ongoing COVID-19 pandemic. Indeed, commentators and scientists across the natural and social sciences have identified multiple links between climate change and the current global health, social and economic crises extending from COVID-19. These include: 1) the greater risk of pandemic occurrence as a consequence of climate change (e.g. HSPH, 2021); 2) comparisons between COVID-19's short-term impact and the longer-term impact of climate change (e.g. Gates, 2020); and 3) the potential for the COVID-19 recovery to offer opportunities for transformation required to address climate change. This report contributes to the third, growing body of work, highlighting the food system as a domain with potential to contribute to a Green and Just recovery from COVID-19.

'Many of the root causes of climate change also increase the risk of pandemics' (Dr. Bernstein, Director at Harvard University's T.H. Chan School of Public Health, 2021).

'To understand the kind of damage that climate change will inflict, look at COVID-19 and spread the pain out over a much longer period' (Bill Gates, 2020).

In November 2020 the UK government published its "10-point Green Recovery Plan" presenting a strategy to address its climate change commitments post-pandemic. The plan outlines how £12bn investment will be mobilised toward 'Green Recovery' initiatives focussing principally on moving away from fossil fuels towards clean energy generation (Parker et al., 2020). The former UN Climate Chief Christiana Figueres highlighted the lack of policy alignment between economic sectors as a key barrier for meeting the UK's ambitious net zero targets (*Sky News*, 2021). In addition to the lack of alignment, we also highlight the absence of policy engagement with key sectors. Absent from the UK's Green Recovery Plan is any reference to the nation's food system. This is surprising considering the major impact of food in relation to climate change, both in the UK and globally. The UN Intergovernmental Panel on Climate Change (IPCC) highlights that the global food system accounts for 21 – 37% of the world's greenhouse gas (GHG) emissions (Mbow, 2019). GHG emissions from the UK's food system have been calculated as contributing 30% of total UK territorial emissions, equivalent to 150 million tonnes of CO_2 (WRAP, 2020a). This contribution is particularly striking when comparisons are made to other industries: for example, British domestic and international aviation accounts for 8% of UK carbon emissions (Hirst et al., 2021). Although sustained pressure has been applied to the aviation industry to reduce its environmental impact (Ibid), the same level of scrutiny has not been applied to the UK food sector.

Not only is the food sector responsible for a significant proportion of climate change impact, it is also a significant constituent of the UK economy. The food sector employs 4.3 million UK

workers, and generates annually about £121 billion or 9.4% to national Gross Value Added (GVA) (Hasnain et al., 2020). The food and drink industry is the UK's largest manufacturing sector, contributing almost £29 billion per year or 2.3% to national GVA (FDF, 2021). *Our Manchester Industrial Strategy* identifies food as part of the "foundational economy", thereby highlighting it as part of the often less visible domain of the economy which provides 'welfare critical' goods and services, such as education, health and social care, utilities and food (Bentham et al., 2013, Foundational Economy Collective, 2018). Despite the fundamental importance of the food sector to citizens' everyday lives and a well-functioning society, as with many aspects of the 'foundational economy' it is also associated with insufficient wages, unsatisfactory work conditions and job instability, among other issues (Foundational Economy Collective, 2018). Studies of the UK food sector support this view, having identified the continued occurrence of poor working conditions, particularly for low-skilled labour (Hasnain et al., 2020). The Manchester Food Board has also brought attention to the significant number of jobs in the local food sector that are low paid (MFB, 2020). **Innovation in the food system, therefore, must promote a Green and Just Recovery to the COVID-19 pandemic,** tackling both climatic and socio-economic challenges simultaneously.

In addition to its national significance, the food sector constitutes a major global industry, earning a market valuation of almost $6 trillion in 2019 (Research & Markets, 2020). Yet the United Nations Environment Programme's analysis of COVID-19 spending by the world's 50 largest economies finds almost no evidence of substantial fiscal policies targeting food system reform (UNEP, 2021a). Indeed, UNEP highlights that, 'Many hard-to-abate sectors, like agriculture, have seen little [green] R&D investment and would benefit significantly from a federal push' (p.38). Moreover, the International Energy Agency states that planned emission cuts across national COVID-19 recovery plans amount to only 15% of the reductions required to fulfil the Paris Agreement (Harvey, 2020a). Major industries and sectors therefore need to prioritise decarbonisation to offset the current disparity with Paris Agreement targets. Engagement with Manchester's food system in relation to a Green and Just Recovery should therefore be viewed as an important opportunity for supporting an economically and socially important sector, addressing the obligations underpinning the Paris Agreement, and becoming a leader in addressing Scope 3 emissions.

'Emission reductions from food production have so far received less attention in GHG mitigation policies than those from energy, transport and other industrial sectors [and] consequently (…) could become the dominant source of global emissions by mid-century' (OECD, 2021a)

The Green Recovery agenda is at a cross-roads. While initial statements of intent to "build back better" have been made, details of implementation are less forthcoming. There is growing concern that while local and national governments endeavour to manage immediate pressures, initial calls and commitments in relation to environmental sustainability have been deprioritised and have not yet materialised in relation to financial commitments. According to UNEP (2021a) only 18% of recovery spending in 2020 from the world's 50 leading economies can be considered "green". This is in the context of G20 countries having committed 50% more to stimulus measures dependent on fossil fuels than on low-carbon energy sources in attempts to avert economic depressions (Harvey, 2020b). This year, carbon dioxide emissions are forecast to increase by the second largest annual rise in history, as a direct consequence of fossil fuel investment (Harvey, 2021a). As the national economy emerges from the initial shocks of the pandemic, green spending should be prioritised and mobilised to support a green transition in sectors such as food, which despite its significant climate impact, so far remains absent from green recovery strategies.

'Today's global targets for 2030 are nowhere near enough to meet the Paris agreement temperature goal… We need a green thread running through all Covid-19 recovery packages' (Alok Sharma MP, 2021).

Manchester's Role in Driving Food System Sustainability

Food Systems and Urban Governance

Cities are increasingly regarded as important sites for food governance as well as key actors in promoting transformation across environmentally and socially significant systems of provision, such as food, transport and energy. The Glasgow Food and Climate Declaration, launched in December 2020, serves as a call to action for local and national governments to raise the profile of the agri-food sector in sustainability policymaking (GFCD, 2021a). Currently over 30 international cities have signed this declaration, including Brighton and Hove, Bristol, Glasgow, Leeds, Leicester, and Middlesbrough from the UK (GFCD, 2021b). Signing the declaration marks a commitment from local governments around the world to develop integrated food policies for tackling climate change, putting a 'food systems' perspective at the heart of their approach (GFCD, 2021a).

The idea of a food system, which is intended to emphasise the interconnected nature of the actors responsible for the production, distribution and consumption of food, has gained traction in recent years, forming the basis of engagement by key governance institutions including Organisation for Economic Cooperation and Development [OECD] (2020), the World Health Organisation [WHO] (2018), and the European Commission [EC] (2020), as well as the UK National Food Strategy (2020) and at a local level, the Manchester Food Board in its efforts to develop city-level targets (2021). A food system is defined by the WHO (2018: p.4) as:

> *'everything and everybody involved in producing, storing, packing, processing, distributing, consuming and disposing of food, including the social, political, economic and environmental systems which influence and are influenced by those activities'.*

The 'food system' idea highlights the following key issues, which underpin insights offered in this report:

1): Thinking of food as a "system" increases awareness of the co-dependencies between food production and consumption and other socio-economic or political factors;

2) This requires an approach to promoting change which accounts for the mutual dependencies and 'lock-ins' which shape the direction of social and technological innovation key to delivering sustainable food for Manchester;

3) Disaggregating the food sector into the activities and processes operating from farm to fork can support the analysis of possible 'intervention points' (GFCD, 2021a) for generating innovation.

The co-dependencies between food systems and social, economic, and environmental factors have been recognised in the European Green Deal, which sets out a plan to make

Europe climate-neutral by 2050. At the heart of the ambition is the EU's 'Farm to Fork' Strategy, which recognises the 'inextricable links between healthy people, healthy societies and a healthy planet' (EC, 2020: p.2). In the UK, the National Food Strategy is developing along a similar logic, as it:

> 'examine[s] the food system from root to branch… [focusing] on health and on the interwoven issues of climate change, biodiversity, pollution, antimicrobial resistance, zoonotic diseases and sustainable use of resources' (Dimbleby et al., 2020: p.8).

The Manchester Food Board has applied a systems-led approach to our local context, stating that:

> 'Food is a cross-cutting issue, and plays a significant part in a range of key challenges. We believe that food can be a tool for impactful and positive change, and we therefore aim to adopt a system-based approach to harness this deep interconnectivity' (MFB, 2020: p.2).

Targeting Consumption-based Emissions

Central to our report is the notion that the City of Manchester should initiate change in its food provisioning system as part of its climate change strategy. Historically, local climate policy has focused more on production-based emissions that occur within territorial boundaries ('Scope 1'), or from the use of energy ('Scope 2'). The City of Manchester has adopted a forward-thinking position, by also committing to addressing its consumption-based ('Scope 3') emissions, which includes **consideration of the emissions arising from goods and services used** within cities, even if a significant proportion of those emissions are produced elsewhere (see Wendler & Blakey, 2021 for a full description of Manchester's consumption hotspots). This is significant, because Manchester's consumption-based footprint has been estimated to be at least 3.3 $MtCO_2$, which is approximately 1.5 times the size of its production-based footprint (Wendler & Blakey, 2021).

The Manchester Climate Change Framework 2020-25 (MCCP & MCCA, 2020) highlights Food as one of seven 'headline areas for urgent action' in city-level sustainability policymaking (p.24). In response, this report brings attention to ways in which transformation can be driven by Manchester's role in **generating demand** for food, engaging with activities such as:

1. Food processing by businesses, food retail, and the hospitality sector;
2. The provision of meals in public contexts (e.g. schools and hospitals);
3. Shaping the infrastructure provided to households (e.g. proximity of food retail to housing; waste collection; transport); and
4. Direct engagement with consumers (e.g. through education and information campaigns).

Changing demand can shape what and how foods are produced, processed and distributed. While changes in demand alone will not drive a shift toward more sustainable production, it is one factor in long term food system transformation. Other key issues include incentive structures which govern production, processing and marketing of foods (such as regulation and subsidy). Unfortunately, many these activities fall beyond the scope of influence of Manchester's government and citizens. However, also important are the organisational capabilities in the form of knowledge, skills, and technologies, that exist within businesses operating at each stage of the supply chain. In Part 2 of this report we offer some suggestions for initiatives to use this form of influence to stimulate change within consumer facing food businesses operating in Manchester. We suggest that focusing on changes in how citizens access food, and how public money is used to purchase food, is key for developing Manchester's role in promoting a transformation toward a sustainable food system. Not only will such an approach deliver important benefits for the city and its citizens, as outlined in the following sections of the report, it will also contribute to the shaping of future demand, key for delivering long term sustainable food production.

Problem Hotspots in need of Action

Food Loss and Waste

Food loss and waste are significant global problems. It is estimated that one-third of all food produced is lost or wasted (FAO, 2021), and that unconsumed food constitutes 8-10% of global GHG emissions (UNEP, 2021b). When compared to the emissions from nation-states, food loss and waste would be equivalent to the world's third largest emitter (Ritchie, 2020). Food loss also results in the misuse of vast volumes of water (FAO, 2013), which is particularly alarming in a world of growing freshwater constraints (FAO, 2020b). The UN has committed to tackling food loss and waste through SDG 12 – 'Responsible Consumption and Production', stating that by 2030 we should, 'halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses' (FAO, 2020a).

The UN's emphasis on food loss and waste has not yet materialised into sufficient levels of waste reduction. While it is understood that food waste occurs at multiple points in the journey from farm to fork, including processing, retail and in the home, the UN's latest analysis brings renewed attention to the concluding stages of this journey, presenting the household, food service industry, and retail sector as key sites of loss (UNEP, 2021b). These three categories are found to produce 931 million tonnes of food waste globally each year, of which 61% comes from households, 26% from food service, and 13% from retail (Ibid). The Manchester Climate Change Framework has also identified actions taken by local households

and businesses as pivotal to the reduction of waste, expressing urgency in the pursuit of this challenge (MCCP & MCCA, 2020).

Recent findings indicate the scale of the challenge presented by food waste in the UK. Examining data from 2018, WRAP (2020b) find that total food waste in the UK post-farm gate amounted to about 9.5 million tonnes (Mt); of this, about 3 Mt included inedible parts such as egg shells, while 6.4 Mt or 70% included edible food parts. The financial value of this 6.4 Mt of waste was estimated at £19 billion. Similar to UNEP's findings at the global level, UK households were found to contribute the largest share of food waste post-farm gate. Household food waste was estimated at 6.6 Mt, or 70% of total UK food waste. Of this 6.6 Mt, 68% was food intended for consumption, with an estimated value close to £14 billion, while the remainder comprised of inedible parts (Ibid). It is for such reasons that Inger Andersen, the Executive Director of UNEP, states that 'reducing food waste would cut greenhouse gas emissions, slow the destruction of nature… and save money at a time of global recession' (UN News, 2021).

While households are a focal point, it is agreed that food loss and waste results at multiple points between farm and fork, meaning that the solutions to address these issues must vary. Much work has been done to raise awareness and promote action in the UK. **Progress has been made through collaboration across public, commercial and private domains, resulting in changes in behaviours of individuals and organisations.** For example, WRAP has developed a Food Waste Reduction Roadmap, which features an industry-wide toolkit to support businesses in reporting and taking action against food waste (WRAP, 2021).[1] Also, the Courtauld Commitment 2025 is a voluntary agreement between leading organisations in the UK food system to reduce carbon emissions and waste by at least 20% between 2015 – 2025.[2] Courtauld 2025 drives improvements in measurement, reporting, coordination, and strategic action across different actors and industries in the UK food system to minimise waste, becoming a model for sectoral collaboration that is now being replicated globally (WRAP 2020a, 2020c). It would be beneficial for Manchester's public bodies and local enterprises to sign the Courtauld Commitment, thereby situating Manchester's efforts against food waste in a wider context and increasing opportunities for collaborative action.

Among the solutions being employed in the UK food system, a considerable number are designed to re-purpose food which would otherwise go to landfill. Such initiatives include use as animal feed (farm loss); energy generation (farm, processing and retail loss); and redistribution for eating by citizens in alterative contexts (often by sustainable food ventures and the voluntary or charitable sector). For example, in 2018 about 25,000 tonnes of food was redistributed from retail, and about 26,000 tonnes from manufacture, via charitable and

[1] https://wrap.org.uk/taking-action/food-drink/initiatives/food-waste-reduction-roadmap
[2] Over 150 organisations are associated currently with Courtauld 2025, as listed by WRAP: https://wrap.org.uk/taking-action/food-drink/initiatives/courtauld-commitment-2025/signatories

commercial pathways to prevent wastage (WRAP, 2020b). Nevertheless, loss of food which could be eaten remains a considerable environmental burden, and therefore food systems thinking must search continuously for strategies by which this challenge may be overcome. In particular, food system innovation must address cultural factors and organisaitonal behaviour in addition to technical and consumer-oriented solutions.

Meat Consumption

Meat products embody a significant environmental burden. In DEFRA's analysis, farming and fishing were found to release 56 million tonnes of CO_2 per year, making them the largest carbon emitter from the UK's domestic food sector (DEFRA, 2016). Among farming activities, the cultivation of livestock causes the largest negative impacts, with beef yielding 28kg of CO_2 equivalent emissions for every 100g of protein produced (Poore & Nemecek, 2018). More broadly, the production of animal proteins uses 83% of the world's farmland while contributing about 58% of global food emissions (Ibid). In addition to emissions embodied in meat production, meat requires additional refrigeration in comparison to other foods, and refrigeration technology carries a high carbon footprint, accounting for 15% of global electricity usage (UKHACC, 2020). Sovacool et al. (2021) have shown that meat and poultry production in the UK creates the highest primary energy demand out of all the food and drink subcategories.

In August 2019, a special report of the UN's IPCC argued that meat consumption should be reduced if global warming is to be limited to 1.5°C above pre-industrial levels, as per the Paris Agreement (IPCC, 2019a). Recommendations for reducing meat consumption have also been issued by leading public organisations in the UK. For example the UK Climate Change Committee – an independent statutory body established under the Climate Change Act 2008 – advocates a 20% reduction in beef, lamb and dairy consumption per person by 2050 in order for the UK to achieve net-zero emissions (CCC, 2020).

Although meat consumption in the UK demonstrated a downward trend between 2011 and 2020, it is still high: consumption for women equals the maximum recommendation, while consumption for men exceeds it (Hasnain et al., 2020). Reducing the quantity and/or changing the type of meat consumed in Manchester would therefore have positive implications for sustainability and health. Positive changes would include – less meat, in particular less beef, use of greater balance of cuts of meat, to avoid wastage, and avoidance of supply chains involving the most intensive farming practices.

Recommendations to reduce meat consumption relate not only to addressing climate change, but also to improving population health. High meat intake, particularly red and processed meat is associated with adverse health effects at population and individual levels. Dietary guidelines in the UK, such as the Eatwell Guide developed by Public Health England, and the One Blue Dot guidelines developed by the British Dietetic Association, all advocate reducing consumption of red and processed meats while increasing plant-based foods (UKHACC, 2020). Non-meat sources of protein are also relevant for their co-benefits with sustainability. As presented in the Manchester Food Board Policy Statement (2020: p.6):

> 'Foods like fruits, vegetables, beans, and grains have a much lower carbon footprint than red meat, poultry, and fish. Increasing the proportion of our diet based on low-emission foods will help reduce the carbon footprint of our food system'.

Increasing the proportion of low-emission foods eaten in the city is not simply a matter of consumers' decision-making. Efforts to educate and inform consumers using, for example, food labels is not enough to shift Manchester's diet. A broader view must be taken, emphasising the role of the food made available, purchased and eaten across different contexts in the city. For example in public institutions such as schools, universities, hospitals, council offices and prisons. Businesses also spend money on food when putting on events and offering workplace meals to purchase. Such contexts offer significant potential for creating demand for less carbon intensive food types, as well as providing opportunities for engaging with citizens to gradually shift tastes and preferences, toward less meat intensive meals. Commitment from the city's public institutions and businesses to consider the food they buy and offer in relation to climate change impact would be a big step forward in respect to moving toward net zero food for Manchester.

Single Use Plastic

Plastics play an important role in food transportation, preservation, hygiene, safety and increasing the lifespan of foods (Yates et al., 2019). The UK's grocery retail sector is the largest user of plastic packaging, accounting for over half of the 1.5 million tonnes of total consumer plastic packaging used every year (EIA & Greenpeace, 2018). Yet there is increasing societal awareness of the negative effects that plastics have on the natural environment. DEFRA (2009) estimated that plastic packaging in the UK could account for the emission of about 8 million tonnes of CO_2 equivalent in a single year. Furthermore, each year up to 12 million tonnes of plastics leak into the oceans (EIA & Greenpeace, 2018), and food and drink packaging is among the most commonly occurring marine litter items in Europe (IEEP, 2018). Indeed, supermarket products have been identified frequently in UK beach clean-up operations led by the Marine Conservation Society (EIA & Greenpeace, 2018). DEFRA (2009) emphasise that to build a low-carbon economy, we must ensure that packaging is developed according to sustainability principles, with the potential to reuse, recycle or recover, and that public infrastructures expand to maximise the recycling and recovery of packaging across society as a whole.

Despite such calls to action, the continued accumulation of plastic products in the natural environment has increased public awareness of the negative effects generated by *single use plastics* in particular. For example, the UK Plastics Pact (led by WRAP) aims to eliminate all single use plastic from the economy by 2025 (WRAP, 2020f). Of particular concern is that 10

UK supermarket chains account for over 810,000 tonnes of single-use plastic placed on the market each year (EIA & Greenpeace, 2018). Recent calls to action on plastics are driven in part by such observations, coupled with the need to increase recycling rates and waste management. For instance, WRAP (2020e) identified that 50% of plastic packaging in the UK was recycled in 2019, with UK households on average disposing of 1.5 items in the general rubbish which could have been recycled. The 50% rate marks an increase from the preceding year, with 90% of UK households now found to recycle regularly (WRAP, 2020d; 2020e). Maintaining this downward trend will require further innovation through collaboration across sectors. Initiatives that are currently promoting collaboration include PlasticFreeGM, a campaign delivered by the Greater Manchester Combined Authority (GMCA) to reduce single use plastics across the region, for which 604 organisations have pledged their support, including local councils and SMEs (PlasticFreeGM, 2021). This regional initiative reinforces national commitments through the UK Plastics Pact, which has in the region of 100 supporting business members, including key food retailers such as Sainsbury's, Tesco, and Waitrose, in addition to major food and beverage brands such as Arla, McCain, and Nestlé (WRAP, 2020g). Through local engagement channels, the thriving independent food sector in Manchester can also be supported in joining such initiatives, thereby ensuring that all businesses in our City are working in solidarity to eliminate single use plastics from our food system.

Food Security

Actions taken to shape food provisioning in Manchester must engage with the notion of food security to ensure a Just Recovery to the COVID-19 pandemic. Food security is a concept used to refer both to the availability of nutritious food and access to it (OECD, 2021b). According to a definition agreed at the World Food Summit in 1996, food security exists when:

> 'all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life' (FAO, 1996 cited in OECD, 2021b: p.15).

The Manchester Food Board expand upon the notion of "food preferences" to emphasise the importance of 'access [to] familiar and culturally appropriate food' for local populations (2020: p.4). In cities such as Manchester with diverse populations, this requires ensuring access to a range of food which accounts for cultural or religious imperatives of existing communities.

There is no widely accepted indicator for food security, and different approaches are used for identifying its existence. Nevertheless, studies tend to converge on the notion that food security is currently inadequate at both global and local levels. According to the UN, in 2019 about 690 million people were affected by hunger worldwide, and three billion could not

afford a healthy diet (UN News, 2021). For England, the Food Standards Agency reports that, in 2018, 10% of adults lived in households experiencing marginal food insecurity, with an additional 10% living in households experiencing moderate or severe food insecurity (ENUF, 2021). In our local context, Manchester City Council reports that **Manchester has been recognised nationally as a high risk area for food poverty**, with 4.1% of the population – or 2.5 million people – at risk, and with over 130 food banks operating in the Greater Manchester region (MCC & STC, 2020).

There is widespread concern that the **COVID-19 pandemic has exacerbated existing levels of food insecurity.** Multiple recommendations for the UK government from the National Food Strategy were aimed at protecting access to healthy food for disadvantaged households in the wake of the pandemic (Dimbleby et al., 2020). In Manchester, emergency food services and food aid providers experienced clear increases in demand following the onset of the pandemic, with parcels being delivered to up to 16,000 people each week (MFB, 2020). Furthermore, Chatham House has expressed concern that UK food prices in 2021 may be entering an upward trend, thereby exacerbating economic pressures for households experiencing income disruptions from the pandemic, and/or food insecurity since before the pandemic (King, 2021). Working toward enabling better access to and availability of healthy, sustainable and appropriate meals and ingredients, **delivered through enterprises which re-invest profits in the city, provide high quality jobs, and develop local skills** to improve citizens lives should be a key part of a Just Recovery for Manchester.

Such approaches to food security show that food production is not the key driver, and that *access* to food is critical. With significance for public policy, recent analyses have emphasised that the determinants of access originate principally *outside* the food system. For example:

> 'Food prices clearly matter for the affordability of food, but overall real incomes remain a much more important factor: where incomes are extremely low, even cheap food may be out of reach, let alone a balanced diet necessary for a healthy and active life' (OECD, 2021b: p.20).

In their analysis of food security, Manchester City Council and Sow The City (2020) highlight the wider socioeconomic conditions that affect access to food, stating that barriers are created by: insufficient funds after other household expenses are completed; restrictions in local food choice, compounded by poor transport infrastructures; and insufficient knowledge, equipment and/or space for cooking healthy meals. Ultimately ending food insecurity in Manchester depends on ending poverty, and therefore requires efforts further beyond the food system than the other three problems hotpots identified in this report. Nevertheless, some considerations for supporting solutions to food insecurity, arising from within the food system, will be discussed in Part 2 of this report.

Addressing these Issues: A Mission-Oriented Approach

The systemic nature of the food industry means that its transformation is a major challenge. By themselves, small-scale initiatives to green food provisioning, taking place in businesses, public sector organisations and communities in Manchester and across the UK, are important but insufficient for the scale of carbon emission reductions necessary. A programme of change featuring cross-sectoral engagement and integrated action is needed, in order to capitalise on the transformative potential of individual projects. In this section, we outline how a *mission-led innovation strategy* can drive collaborative action to harness the power of multiple Manchester food stakeholders and work toward the transformation of Manchester's food system for the benefit of all citizens.

Historically, missions have been deployed to overcome major social challenges by providing direction to a wide range of actors. Principally, this is by taking significant problems facing society and understanding them in terms of pragmatic steps, around which different organisations and sectors can engage (Mazzucato & Dibb, 2019). Such missions have successfully been applied in multiple areas of public policy including agriculture, defence, and famously, space exploration (EC, 2018). The following section of this report (Part One) will outline the rationale and proposed objectives of a Sustainable Food Mission for Manchester. Part Two will propose a range of potential activities extending from this Mission that can create positive change on the ground.

Importantly, while missions may be defined by the state, or other actors motivated to serve the public good, such actors are not required to engage in the ongoing and direct management or coordination at the level of individual organisations. This can be cumbersome, resource intensive, and is often perceived as stifling innovative problem solving. Rather, missions 'act as frames and stimuli for innovation' (Mazzucato & Dibb, 2019: p.2), creating the impetus to solve collective problems without promoting hierarchical structures of managerial control, or highly prescriptive methods to achieve stated objectives. Missions aim to cultivate a range of creative solutions, with the understanding that the solutions themselves may need to change over time.

'By setting the direction for a solution, missions do not specify how to achieve success. The right answers are not known in advance. Rather, missions stimulate the development of a range of different solutions to meet grand challenges and reward those actors willing to take risks and experiment' (Mazzucato & Dibb, 2019: p.2)

A key challenge in developing a Sustainable Food Mission for Manchester is to take account of the existing visions of Manchester's future. Food provision is shaped by multiple domains of activity taking place in businesses, households, public institutions, the voluntary sector and local planning. Improving the food made available and accessible to citizens depends on collaboration across these contexts. This report situates sustainable food provision within this context, highlighting how food system transformation can contributes to the delivery of Manchester's agreed upon priorities.

At present, the **Sustainable Food Vision for Greater Manchester** (Walsh et al., 2017), the **Manchester Food Board Policy Statement** (MFB, 2020), work by the **Sustainable Food Places** (SFP, 2021) and the **National Food Strategy** (Dimbleby et al., 2020) all offer important guiding principles in relation to sustainable food provisioning. The future vision for the City of Manchester as a whole is offered most definitively in the **Our Manchester Strategy 2021-25** (OMS), which details the five key priorities 'to put Manchester in the top-flight of world class cities by 2025' (MCC, 2021: p.1). One priority is to develop 'A Liveable and Low Carbon City' to address the challenge of climate change. The OMS emphasises that, 'We must speed up the pace of change for the city to play its role in addressing this global [climate] challenge and to deliver a green recovery from COVID-19' (Ibid: p.3). Our Sustainable Food Mission captures broad areas of agreement across the existing visions of an equitable, zero-carbon food system, and aims to integrate these into Manchester's Green and Just Recovery from COVID-19 in order to catalyse the pace of change. **The Mission entails four core aims**:

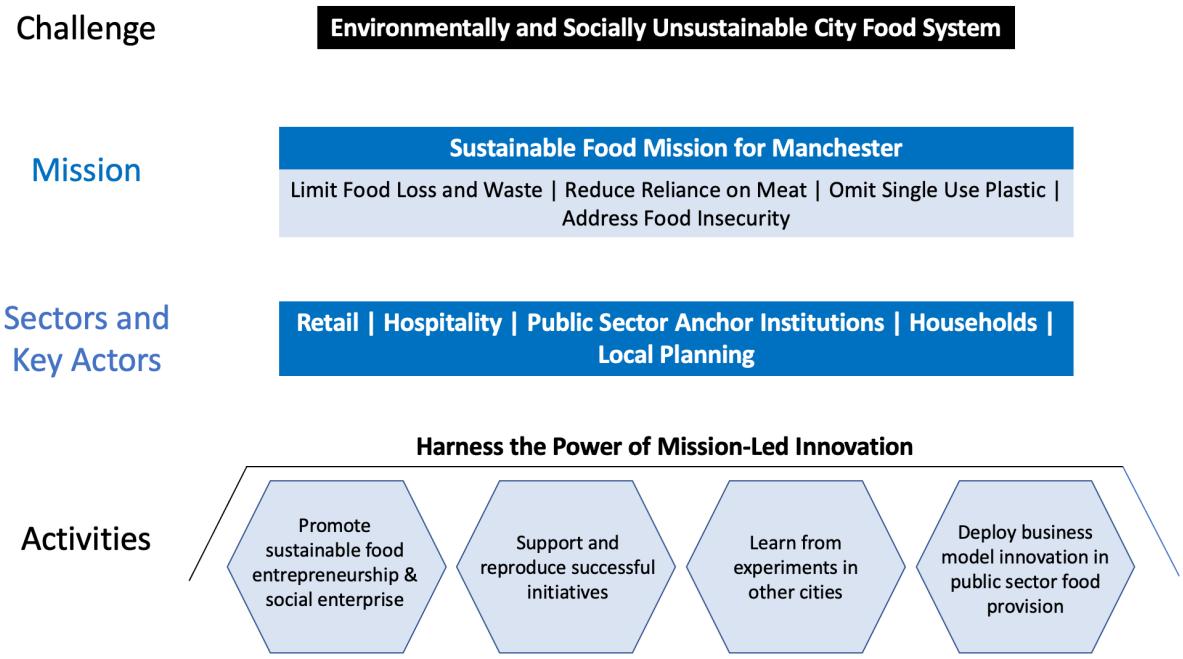
1. **Limit food loss and waste**

2. **Reduce reliance on meat**

3. **Omit single use plastic**

4. **Address food security**

Delivering a sustainable food system through these aims will also have the potential to address key issues facing the city – food security, health and wellbeing, job creation, and skills. The co-benefits of this Mission are discussed in more detail in Part One of this report, while a series of catalysing activities to deliver the Mission will be recommended in Part Two. It is anticipated that these activities will support a sustainability transition through 'parallel progress on a number of fronts including, but going far beyond, technology to include infrastructural and behavioural change' (EC, 2018: p.6).



Co-Benefits of a Manchester Mission for Sustainable Food

Emerging analysis on COVID-19 Recovery strategies suggests that sustainability initiatives create 'a nexus of opportunities' across multiple systems, leading to significantly enhanced returns on investment (Shuckburgh et al., 2020: p.2). In this section, we present data highlighting several co-benefits of pursuing a Sustainable Food Mission.

Health and Wellbeing

Food has been described by the EAT-Lancet Commission as 'the single strongest lever to optimise human health and environmental sustainability on Earth' (Willett et al., 2019b: p.5). The profound interrelationships between diet, health and climate change are now acknowledged by many individuals working in our healthcare system, with two-thirds of UK health professionals agreeing that changing diets to reduce environmental impacts, such as by eating less meat, can also improve one's health (UKHACC, 2020a). Therefore a key outcome of a shift toward more sustainable food provision would be a shift in the relative volumes of the *types* of food consumed – meaning a change in Manchester's diet. There is a growing consensus among medical and biological scientists that industrialised diets lacking in whole foods are a major underlying contributor to long term diet-related ill health. The Director of the Centre for Food Policy at City, University of London, summarises:

> 'One of the leading risk factors for chronic diseases is diet. The scientific evidence shows that diets high in fats, especially saturated fats and trans-fatty acids, free sugars, and salt and low in fruits, vegetables, pulses (legumes), whole grains, and nuts pose significant risks for chronic diseases' (Hawkes, 2007: pp.312-313).

Recent modelling of the health and environmental impacts of dietary guidelines finds that adopting the EAT-Lancet recommendations could lead to a reduction in premature mortality from non-communicable diseases by 25%, with significant decreases in GHG emissions also ensuing (Springmann et al., 2020). The EAT-Lancet recommendations consist of a "planetary health diet", which include reducing the consumption of red meat and sugar by 50%, while

doubling the consumption of plant-based foods (Willett et al., 2019a). Our recommendation to reduce meat intake in Manchester has been informed by these conclusions.

The EAT-Lancet Commission also notes that 'the data are both sufficient and strong enough to warrant immediate action' for changing food production and consumption patterns (Willett et al., 2019b: p.26). This statement is certainly applicable to the UK context, where one in seven deaths has been attributed to poor diets (Dimbleby et al., 2020). Diet-related disease has also been identified as one of the top three risk factors for COVID-19 mortality, leading the authors of the UK's National Food Strategy to declare unhealthy diets as 'a medical emergency we can no longer afford to ignore' (Ibid: p.7). In response to the COVID-19 pandemic, Public Health England (Hancock et al., 2021) have also stated that,

> 'it is now more important than ever that we continue to monitor the levels of people living with excess weight in the population. Understanding the data, the trends and patterns enables us to make the case for national and local action, which includes… healthier food and activity options'.

Monitoring and responding to occurrences of obesity and excess weight in the population appears especially pertinent when diet-related ill health is projected to worsen over time: recent figures state that 63% of adults in England are overweight or obese (PHE, 2017), while 72% of UK adults are anticipated to be obese or overweight by 2035, according to the NIHR Manchester Biomedical Research Centre (2021).

In addition to increasing the risk of mortality, diet-related diseases place extensive demands on our health and social care infrastructure, and impact the wider economy. Public Health England (2017) have estimated obesity's economic cost to wider society at £27 billion. Overweight and obesity-related ill health costs the NHS £6 billion per year (PHE, 2017), and contributes to the overall cost of treatment for chronic conditions, which equals £7 in every £10 of health and social care expenditure (TKF, 2021). According to NHS Digital (2020), about 11,000 hospital admissions in England were directly attributable to obesity over a 20-month period, and obesity was also a factor in 876,000 other admissions. Furthermore, according to Cancer Research UK, obesity and carrying excess weight constitute the second biggest cause of cancer, leading to over 1/20 UK cancer cases (CRUK, 2021).

The challenge of diet-related ill health is prominent in Manchester. An estimated 60% of adults are overweight or obese in Manchester, with a 65% estimate for the North West (LCA, 2021a). £185million of health and social care expenditure in Manchester is attributed to tackling overweight and obesity-related ill health (MHCC, 2020). Furthermore, recent analyses for Manchester classified about 12% of reception-year children as obese (LCA, 2021b), and 26% of year-6 children as obese (LCA, 2021c). When overweight pupils are considered in addition to obese pupils, one finds that:

> '22% of pupils in Greater Manchester are starting school in Reception with excess weight, which increases to over 35% when leaving primary school. These are *much higher rates… than the rest of the country*' (GMCA, 2017: p.62, italics added).

This analysis corresponds with a broader observation from Public Health England (2017), that 'younger generations are becoming obese at earlier ages and staying obese for longer'. Significant effort must be made to reverse this trend for the wellbeing of Manchester's children and future adult population.

Our emphasis on transforming food provision to improve diet and wellbeing is built on the increasingly widespread notion that focusing on consumer decision making is not the best way to promote dietary change. Public Health England (2017: italics added) highlight this point in relation to obesity:

> '… many people still find it difficult to eat healthily. This is primarily because *we are living in an obesogenic environment where less than healthier choices are the default*, which encourage excess weight gain and obesity… our environment, and particularly the availability of calorie-rich food, now makes it much harder for individuals to maintain healthier lifestyles'.

The European Parliamentary Research Service (EPRS) highlights that consumer food choices are underpinned by agricultural policies and production practices:

> '[Agricultural] policies and practices affect decisions made by agricultural producers about *what* to grow and produce. These can impact on the availability, price and nutrient quality of different foods… and the *choices* consumers have available to them. Such food choices affect diets, which in turn can influence levels of obesity and diet-related chronic diseases' (McEldowney, 2020: p.2).

These observations highlight the importance of a food systems approach, which makes visible the wide range of factors that *influence* consumer decision making. In Manchester, such an approach involves increasing the level of support to enable collaboration across the system of provision, toward generating demand for and taking action to tackle these key issues.

Businesses and the Local Economy

A growing body of **research is revealing the interrelationships between environmental impacts and economic stability.** On the basis of current policies, global temperature increases of 2.6C by 2050 are forecasted, which is expected to result in the loss of 6.5% GDP per year for the UK economy by mid-century (Harvey, 2021b). As a point of contrast, the G7 economies have contracted by an average of 4.2% during the COVID-19 pandemic. The anticipated economic losses can be attributed to the impact of extreme weather events, reductions in agricultural productivity, and declining public health, among other factors. According to this model, the importance of compliance with Paris Agreement targets is critical, because limiting global warming accordingly could reduce the UK's economic losses to 2.4% GDP per year by 2050 (Ibid). These statistics, therefore, highlight the importance of establishing a green and just COVID-19 Recovery that encompasses all sectors and industries, from global to local levels. Given that food and drink consumption in Manchester constitutes 16% of our residents' total carbon footprint (MCCA, 2021), it is essential that the City's Recovery plans embrace sustainable food to reduce our carbon emissions. This will help to protect both our climate and our local and national economies.

Support for sustainable food SMEs is an activity that can reduce the City's carbon emissions and increase local value creation. There are significant economic benefits that can extend from buying goods from SMEs. Research by local authorities states that, for every £1 spent at a SME, 63p remains in the local economy, in contrast to 40p from purchases made at a larger business (O'Connell, 2013). Local business-owners will often use their income to make purchases at local retail, leisure and hospitality venues, increasing the circulation of wealth in the local economy. Purchasing items specifically from locally-owned food businesses that are reliant on local produce can yield multiple co-benefits. Such products are often perishable foods associated with shorter supply chains, resulting potentially in lower emissions from transport and distribution than for products imported over longer distances (O'Connell, 2013). Shorter supply chains also enable producers to eliminate reliance on middlemen, allowing them to retain greater proportions of income which can be reinvested in local economies (Ekanem et al., 2016). A study of local food production and consumption in East Tennessee, USA, found that for every dollar spent on local food consumption, an additional $0.51 in economic activity would be created throughout the region (Ibid).

Value creation in the local economy can be catalysed further by promoting food technology startups. Unlike other SMEs, startups often harness established and emerging technologies to scale their business models nationally and internationally, capturing increasing amounts of market share prior to "exit" – their purchase by a larger corporation. Currently, startup businesses are estimated to contribute £196 billion annually to the UK economy (Phillips, 2019), serving alongside SME's as engines of growth and job creation. Sustainability-oriented startups are particularly important for their **ability to create green jobs**, which are widely considered a foundation upon which the future competitiveness of economies will depend. **Sustainable food startups** will be particularly important for their role in delivering product, service and business model innovations that can tackle the key problem areas of our food system, providing a combination of economic, environmental and social co-benefits.

Although sustainable food startups are relatively new to Manchester's economy, the current socio-economic context is advantageous for their development. First, this is because of **increasing demand for sustainable food and drink** options. McKinsey & Company (2020: p.3) have observed that: 'Increased visibility and consumer demand for sustainable and perceived-healthier food is one of the most consistent long-term food trends', with 25% of consumers having made changes to their diet over the past three years to align to priorities around wellness and sustainability. More broadly, the global market for sustainable and ethical food labels is expected to increase at a compound annual growth rate of over 7% between 2019-2025 (Cision, 2020). **Growing interest in food-tech startups from investors** will provide additional support for growth: in 2020, total investment in food technology

companies in Europe was estimated at 2.4 billion Euros, up from 1.3 billion in 2018 (Lock, 2021).

Second, the wider **commercial ecosystem in Manchester is suited to the launch of technology-driven startups.** According to professional services firm BDO UK (2019), 'Manchester is indisputably the UK's second biggest tech hub after London and the South East', with the technology sector employing 100,000 workers and generating a combined turnover of £3.2 billion. Startups also contribute to the overall prominence of the wider Greater Manchester SME community, with the region accounting for 40% of total SME growth in the entire north of England since 2015 (Round et al., 2019). This growth rate is underpinned by a willingness to take calculated risks and innovate, with 76% of GM SME's conducting innovation projects between July 2019 – June 2020, which is double the national average (BGH, 2021). **In the words of Greater Manchester's Mayor Andy Burnham:**

> 'We have the infrastructure, secure digital environments, and the talent pipeline to make things happen… This puts us in the perfect position to trial new technologies: we're agile enough to get up and running quickly, but large enough to test at scale before rolling out pilots UK-wide' (Burnham cited in BDO UK, 2019).

This combination of factors means that there are significant networks and complementary assets across the commercial ecosystems of Manchester, and the Greater Manchester region, that can be leveraged to support the launch of new technology ventures, in this case of sustainable food. Furthermore, there is a role to play for public policymaking in harnessing commercial capabilities effectively for this purpose, for example through the expansion of public – private partnerships centred around the Sustainable Food Mission.

Conclusion

Part One of our Report has emphasised why Manchester's food system must be included in discussion and planning for the COVID-19 Recovery. Historically, food systems have been absent from sustainability policymaking at both national and local levels, and they continue to be absent in strategies such as the UK government's "10-point Green Recovery Plan". This is despite the food system's crucial role within the UK economy, and its extensive contributions to climate change, constituting up to 30% of the UK's territorial GHG emissions. The food system also impacts directly on public health, with the current nature of food provisioning acting as a driver of chronic disease. Food system interventions that address these issues can produce multiple co-benefits by generating value for societal health and wellbeing, the local economy, and global climate, therefore supporting a Green and Just recovery from the COVID-19 pandemic.

In addition to outlining the case for change, Part One has suggested that a transition to a **more sustainable food system can be promoted by the adoption of a mission-led innovation strategy.** This approach relies upon cross-sectoral collaboration and engagement around a common cause, harnessing the innovative potential of Greater Manchester's diverse food stakeholders. Public policymaking has an important role to play in facilitating collaboration and engagement, and providing the forums through which a Sustainable Food Mission can translate into detailed plans of action on the ground.

Part Two of this Report will outline key activities through which Manchester can create an environment in which the problem hotspots identified above can be addressed. It will provide examples of sustainability initiatives from which Manchester can learn, or adapt to our local context. It will also introduce novel ideas for sustainable food provisioning which, if implemented, could provide Manchester with global exemplar status for urban sustainability transitions. Speaking recently of the UK's green ambitions, Alok Sharma (2021) stated that 'we aim to become the world's leading centre for green technology, finance and wind energy', yet there is also an opportunity for the UK to take a lead in promoting a mission-led innovation strategy for food system sustainability. **The City of Manchester can provide more than just a portfolio of sustainable food initiatives. A Sustainable Food Mission can serve to garner commitment, drive engagement and support action across political, business and public domains.** This is how we can develop pathways to more transformative change and ensure the city plays its full part in providing sustainable food to all its citizens.

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FOOD SYSTEM ANKORED IN CONSUMER CHOICE
FOOD & DRINK
WASTE FOOD
GOES TO
FOOD BANKS
CARE HOMES
LOCAL CONNECTIONS
TRANSLATE INTO SUSTAINABLE DIETS
MEAT FREE MENUS
COMMUNITY GARDENS
WIDER ECOSYSTEM OF FOOD-PRODUCING ORGANISATIONS
INTERVENTION POINTS AROUND
SCHOOL MEALS
SUPERMARKETS
EDUCATION - CO-BENEFITS
HEALTH, NUTRITION, POVERTY
RETAILERS
GROWERS
CONSUMERS
CONNECT