

Organisation Level Contributions to Meeting Manchester's Carbon Budget

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NB: All views contained with this report are attributable solely to the author and do not necessarily reflect those of researchers within the wider Tyndall Centre.

Summary

This review considers how organisations in Manchester can align their actions to reduce carbon dioxide emissions (CO₂) with the city's carbon budget (to stay within 15 MtCO₂ during 2018 to 2100). It focuses on sources of emissions that are covered in the Manchester carbon budget – energy related CO₂ emissions within the city, including building energy use and transport. The report draws on inputs from a workshop with Manchester Climate Change Partnership stakeholders in February 2020. The workshop emphasised the need for a common approach to setting targets and commitments, and to guidance for measuring and reporting progress, to unlock the wider benefits of organisations collaborating to deliver high impact policies across their areas of influence. The report recommends a toolkit-based approach which allows for ambitious targets on building energy use directly aligned to the Manchester budget, while acknowledging the data and boundary issue challenges associated with applying the same approach to transport emissions. Separate approaches for buildings and transport emissions are therefore proposed, as is a recommendation for knowledge and experience sharing amongst the Partnership to achieve challenging targets in the limited timeframe available.

Introduction

In June 2018 the Tyndall Centre for Climate Change Research at the University of Manchester was commissioned by Manchester Climate Change Agency (MCCA) to advise on setting science-based carbon reduction targets for Manchester. This led to the development of the Agency's 'Playing our Full Part' proposal (<http://www.manchesterclimate.com/targets-2018>) and the formal adoption of science-based carbon reduction targets for Manchester's direct¹/energy-only CO₂ emissions by Manchester City Council, in November 2018.

In November 2019 the Tyndall Centre was commissioned by the Agency to review the city's climate change targets and recommend revised targets, as required. The review covers four areas of activity:

- Direct / energy-only CO₂ emissions
- Indirect / consumption-based CO₂ emissions
- CO₂ emissions from flights from Manchester Airport
- Target-setting and reporting methodology for organisations and sectors

The full brief is available from <http://www.manchesterclimate.com/targets-2020>.

This report covers a review of target setting and reporting for organisations in Manchester and provides recommendations on how they might be aligned with the city of Manchester's carbon budget. The aim of organisation level targets is to guide action across the city in line with Manchester's city-wide climate change goal. Manchester will only stay within its adopted carbon budget if organisations reduce the energy related CO₂ emissions associated with their local activities in line with the interim and long term carbon targets of the city. Organisations signed up

¹ This definition of 'direct' refers to fuel use (Scope 1) and electricity use (Scope 2) within the local authority geographic area.

to supporting the Manchester climate change target need clear guidance for setting targets and commitments that translate the urgency and ambition of the Manchester target into their operations in a practical way. The recommendations of this report therefore are intended to offer an approach for organisations in Manchester to agree common targets and commitments towards staying within the city's carbon budget.

This report is primarily based on input from participants at the Manchester Climate Change Partnership (MCCP) workshop on organizational target setting held on the 7th Feb 2020. Additional input provided by Matt Rooney at Anthesis Group and Simeran Bachra at CDP.

Key Recommendations

Based on the MCCP workshop on organisation level targets this review makes the following key recommendations:

- Take a 'toolkit' approach to promoting actions. A singular target covering all of an organisation's contribution to Manchester's CO₂ emissions is not practical due to data availability, boundary and double counting issues. The goal of promoting appropriate climate change action can also be achieved by a combination of targets, commitments and best practice, where appropriate, applied to different sources of carbon emissions. Therefore, in the near term quantified targets should be set for emissions from on-site building energy use and a commitment to common actions on travel should be set for transport emissions.
- Targets for on-site energy use should translate the interim and long term reduction goals of the Manchester carbon budget directly into organisations' action plans for building energy emissions. This does not necessitate a carbon budget at the organisation scale.
- Having common guidance for setting targets, commitments and best practice across the city is beneficial for driving action and simplifying measuring and reporting. A clear set of guidelines for all organisations signing up to the city's climate change objectives will align the actions of stakeholders in the city. There should also be a common frame of reference for public messaging around the adopted measures.
- Organisations are at different stages and have access to different resources for implementing and monitoring actions. The Partnership should facilitate knowledge, experience and data sharing.
- Reporting should be as simple as possible and align with existing reporting commitments where possible. For example, to implement the on-site energy use target annual energy usage across Manchester based buildings should be sufficient and can overlap with other reporting platform requirements in some cases.

Organisation Level Environmental Sustainability Targets and the Manchester Carbon Budget

Organisations have a wide range of environmental sustainability issues to address, including energy use, procurement, waste disposal, water consumption, biodiversity and pollutant controls, Existing targets, regulations and reporting platforms already exist in a number of these areas.² A greater focus on environmental impacts is being more widely considered in direct relation to social and economic performance of the organisation through approaches such as the triple bottom line.

The Manchester carbon budget relates to energy-only CO₂ emissions within the local authority boundary. This includes direct CO₂ emissions from fossil fuel use in transport, industrial processes and heating, and emissions associated with the supply of electricity used in Manchester. Separate recommendations in the Tyndall Manchester carbon budget report for Manchester state the need to reduce emissions of non-CO₂ greenhouse gases over time and increase the city's net removal of carbon through land use, land use change and forestry (LULUCF). The size of the Manchester carbon budget is also directly related to a national aviation and shipping budget. This commits Manchester to take action to help stop the increase of, and over time reduce, UK aviation emissions so that the carbon budget available for Manchester is not reduced. Table 1 is a summary of how different sources of carbon emissions in Manchester relate to Manchester's local carbon budget in Tyndall Manchester's methodology (for more detail on the underlying methodology see [1]).

Table 1: Summary of sources of emissions in relation to the Manchester carbon budget

Source of Emissions	Associated Tyndall Manchester Carbon Budget
International and Domestic Aviation CO ₂	UK national carbon budget
Shipping CO ₂	UK national carbon budget
Electricity use (all sectors within Local area) CO ₂	Local carbon budget - Consumption based (Scope2)
Land transport direct CO ₂	Local carbon budget
Commercial and industrial energy use direct CO ₂	Local carbon budget
Domestic energy use direct CO ₂	Local carbon budget
Imported goods	Not included in local carbon budget
LULUCF CO ₂	Not included in local carbon budget – separate recommendation made
Non-CO ₂ greenhouse gas emissions	Not included in local carbon budget – separate recommendation made
Cement process emissions	Not included in local carbon budget – global allocation

² For example, new planning requirements for biodiversity 'net gain' and, while in the EU, the Fluorinated Gas (F-Gas) Directive setting regulatory targets to reduce emissions significantly by 2030.

The scope of this report is to consider how organisations can put in place carbon reduction actions in line with the Manchester carbon budget. As noted above, aviation emissions, non-CO₂ gases, and LULUCF all need to be considered and have actions taken for the Manchester carbon budget to be viable (see [2] and [1]). Manchester based organisations can also take action through sustainable procurement measures to support decarbonisation outside of the area through their supply chain. The focus of this report however is on an organisation’s on-site building energy and transport emissions in the Manchester area that relate directly to the Manchester 15 MtCO₂ carbon budget.

Aligning Organisations with Common Climate Change Goals

To meet its existing city-wide climate change objectives Manchester needs organisations within the city to undertake actions to reduce their energy related CO₂ emissions in line with the urgency and ambition of the city’s adopted 15 MtCO₂ carbon budget. To stay within this budget, energy related CO₂ emissions within the city boundary need to achieve an average reduction rate of 13% per year from 2018 onwards until reaching zero.

There are different approaches that can be taken to translate a shared common target, such as the Manchester carbon budget into an individual organisation’s target. A brief summary of approaches reviewed for this report is given below;

- a. **Allocate organisations a share of a common carbon budget.** The Manchester carbon budget is a share of the remaining global carbon budget for meeting the objectives of the Paris Agreement. This aligns Manchester with a shared climate change goal - the Paris Agreement objective of limiting the rise in average global temperature from the pre-industrial period to well below 2°C. The report by Kuriakose et al [2] sets a methodology for determining Manchester’s share of the remaining carbon budget and this therefore frames the scale and urgency of the Manchester response. A similar approach could in principle be applied down to the organisational level. However scaling down further increases a number of cross-boundary and data availability issues emerge. Whereas using BEIS sub-national energy data provides a robust, consistent and geographically bounded means of allocated emissions within the UK, such a data set is not currently available for doing so within the local authority area and between organisations.
- b. **Translate the common target’s relative change in carbon emissions to those of the organisation.** For example if the wider Manchester target is to have reduced CO₂ emissions in 2025 by 70% against 2015 levels, then the organisation applies this and other interim targets to its emissions reduction action plans. This is a similar approach to that taken by the Science Based Target Initiative (SBTi) where a global or similar target, such as net zero by 2050, is applied to an organisation – this may be through applying a linear reduction or global carbon budget pathway to 2050, or following a global emissions pathway related to a carbon budget related to a global temperature rise target. Applying such an approach to the Manchester carbon budget means the targets are aligned with defined equity principles, no reliance on carbon dioxide removal technologies until proven, and consider aviation, shipping and cement process emissions for the local context.

This translation of the common target onto an organisations carbon emissions could be done in the same way for all organisation types. It could also be that an adjustment is made based on the sector the organisation is classified as, or by economic performance or similar indicator. For example sectors that are considered harder to decarbonise are afforded a less stringent set of emissions reduction targets, while sectors considered to have greater decarbonisation potential assume targets with faster cuts in emissions.

- c. **Setting common commitments.** As an alternative to quantitative target setting, organisations may opt to commit to a common set of actions over a specified time period that reflect the level of system change required by a common target. For example London Business Climate Leaders (LBCL) have taken this approach to develop actions from businesses to support the delivery of London’s climate change target, such as switching their fleets to zero emission capable vehicles with charging infrastructure on their premises by 2025.³

Toolkit Approach for Manchester

Approaches to setting organisation level climate change actions related to the Manchester carbon budget were discussed at a workshop on the 5th February 2020. The workshop participants, drawn from the MCCP, discussed how best to develop a set of common targets and commitments to contribute to decarbonising Manchester given current data and organisational practice considerations.

The key message from the workshop was to have a ‘toolkit’ based approach as opposed to a single target/commitment covering all relevant aspects of greenhouse gas emissions. Not all sources of emissions within the Manchester carbon budget target have the same level of data availability and clear boundary lines for organisations. In particular, whereas building energy consumption within a geographic area is relatively straightforward to measure or estimate, CO₂ emissions associated with an organisation’s travel within and outside the boundary are more challenging to define. As building energy use and transport are the key sources of emissions directly covered by the Manchester carbon budget, specific consideration is given in this review to how targets and commitments might be set for on-site energy use and transport emissions.

While the focus of this review is on energy-related CO₂ within Manchester, the workshop highlighted the need for additional consideration across the MCCP on a wider range of issues. These include non-CO₂ gases and procurement related emissions. Within the toolkit framework it would therefore be possible for MCCP to expand on common goals for these sources of organisational emissions. In the case of non-CO₂ gases this may align with the recommendations in the Tyndall Manchester carbon budget for Manchester [2] to reduce emissions of non-CO₂ over time in line with the IPCC global assumption. As there are not local authority scale emissions data for non-CO₂ gases it was not possible to quantify the reduction rate for these gases at a city scale, but this could be developed at an organisation level. Overarching national regulation and targets, for example on fluorinated gases, could also be incorporated. These considerations, as with those relating to aviation emissions could be further incorporated into the toolkit over time.

³ See <https://www.cdp.net/en/cities/london-business-climate-leaders>

On-site Energy Use

Energy used in commercial, industrial, public sector and domestic buildings across Manchester are a key contributor to the city's CO₂ carbon budget. Emissions from buildings can be assessed from annual energy meter readings. It was highlighted in the workshop that in some cases access to energy meters might require negotiation with a tenant or additional work to disaggregate some current datasets into an organisation's share of a building's energy use within the city. However overall the workshop participants agreed that that a process to determine their organisation's building energy use within the city would be possible and that this would be further supported with simplified reporting.

The translation of the city-wide CO₂ reduction target onto an organisation's building energy use was considered a viable option in the workshop. While it was noted in the workshop presentation that different weightings for organisational targets due to sector or an economic measure could be considered, the additional methodology and data requirement makes a generic application of the common carbon pathway onto all organisations the most practical option. This would mean organisations in the city make efforts to follow the emissions reduction pathway set out in the Manchester carbon budget – making the same relative change in emissions from the baseline as in the common carbon target.

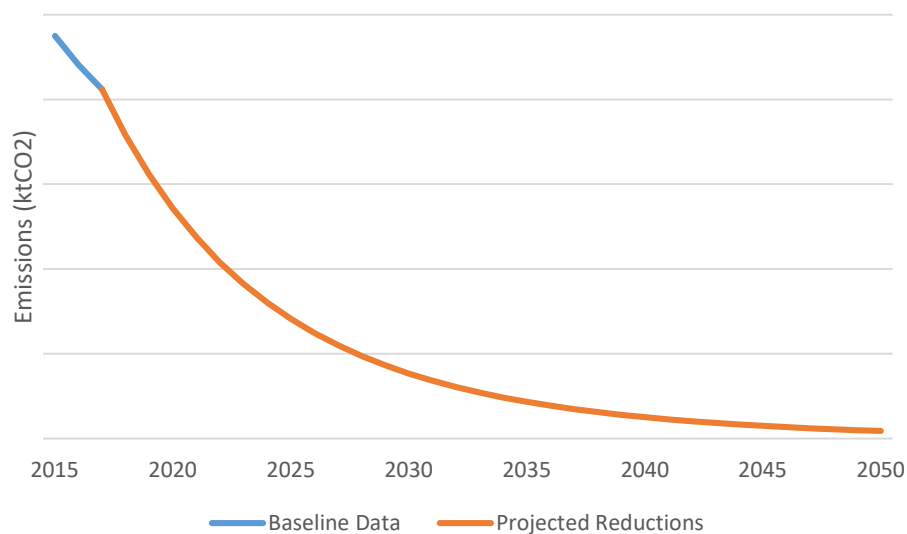


Figure 1: Stylised Emissions Reduction Projection Aligned with Manchester Carbon Budget

In effect organisations would implement an emissions reduction strategy similar to the Manchester carbon budget's projected emissions reduction rate. These are stringent, challenging targets that reflect the diminishing window of opportunity for staying well below 2°C of global temperature rise and the urgency highlighted in the Manchester carbon budget to reduce annual emissions. It is unlikely that organisations would match the exact year on year reductions of this projection, and that a more 'step-wise' reduction in emissions would be more likely. The targets therefore could draw on the projection to set regular milestones based on the relative reduction from 2015 conveying the scale and urgency of emissions reductions needed to stay within the budget. The table below breaks down the relative change in annual emissions relative to 2015 based on the maximum carbon budget projected in Figure 1;

Table 2: Relative Change in Annual Emissions Applied to Onsite Energy Use

Milestone Year	Change in Annual Emissions Relative to 2015
2025	70%
2030	84%
2035	91%
2040	95%
2045	97%
2050	98%

Travel

Through the MCCP workshop a number of issues with estimating and monitoring emissions from transport within the Manchester boundary area were discussed. Firstly, organisational transport emissions typically include business travel, but this may also be expanded to include staff commuting and customer travel depending on the definition applied. Differences may exist even within what is classified as business travel by different organisations. Boundary issues were also identified as a challenge for applying the same common target based approach as with on-site energy use. For example if staff commuting or customer travel is included as an organisations transport emissions, understanding what proportion of these emissions are within the Manchester boundary requires an additional methodological burden. Similarly issues of double counting, where staff or customers engage with multiple organisations during a trip into Manchester were discussed. An example was given about how the transport methods of suppliers and organisations using rented space can contribute to impacts and this requires a different approach to incentivising low carbon behaviour than other business related travel. It was also acknowledged that the data gathering needed to monitor transport emissions is more challenging than for on-site energy use particularly beyond business travel, and not all organisations have existing systems in place to collect this information.

It was therefore considered necessary by the workshop participants to adopt a different approach for transport emissions in a way that takes into account implementation issues, but also promotes the level of action on reducing Manchester’s transport emissions across the city. Reducing transport emissions through organisation level action is best suited to a structure of commitments to common actions on travel related to organisations. It is likely that to have the greatest impact on transport emissions within Manchester that organisations; 1) coordinate implementing these actions with each other and Transport for Greater Manchester; 2) include a consideration of all travel related to the organisation (e.g. as well as action on business travel and staff commuting, enable customers and visitors to travel in a low carbon way).

Sustainable travel plans already exist, and in some cases organisations may already have workplace travel planning which include sustainability goals. Aligning these plans and sharing ideas to form a common action plan for Manchester organisations on travel could be highly effective in delivering a step change in Manchester’s transport emissions. Effective and comprehensive travel commitments need to cover (in order of beneficial impact);

- Moving more travel onto ‘active modes’ like walking and cycling to reduce emissions and contribute to improved health and reduced traffic congestion.
- Shifting from private cars to public transport to reduce traffic congestion and improve local air quality,
- Move to electric vehicles to reduce overall CO₂ emissions compared to petrol and diesel cars (although congestion, social exclusion and some local air quality issues remain).

There are mechanisms whereby organisations can support these changes through work place schemes. This may include subsidised season tickets for public transport, providing onsite

facilities such as secure bike storage and electric vehicle charging points, and providing information on travel that emphasises low carbon modes. Such actions should be complimented by removing incentives for high carbon transport, such as subsidised car parking for petrol and diesel vehicles. The timescale and level of actions need to be determined by MCCP but have to be ambitious enough to align with the Manchester carbon budget. These commitments could align with existing strategies such as the Greater Manchester Made to Move strategy to ‘double then double again’ cycling in the city and encourage more trips through walking [3]. Existing studies, example corporate policies and template strategies can be referred to for guidance – see [4] [5] [6] [7].

The focus of this travel action commitment is on reducing emissions from surface transport within Manchester. However it is likely that these actions could also support lower emissions journeys outside of Manchester and these emissions savings would be counted in the localities those legs of any travel taken within those boundaries. As discussed in the workshop this is not a problem because wider benefits from Manchester based strategies are a positive outcome.

Separate guidance on aviation emissions are being reviewed by MCCP, however it may be beneficial to include shared goals on aviation in relation to these targets in organisation travel plans and avoid duplication.

Guidance and Reporting

Throughout the workshop participants highlighted the need to have common rules for setting targets, commitments and how to monitor them as part of Manchester’s collective approach to tackling carbon emissions. There are sometimes different sets of guidance and advice for how emissions are counted and the implications of some measures on these emissions. For example green/renewable energy tariffs and carbon offsets contribute to emissions reductions in some carbon accounting approaches but not in others. Similarly definitions such as what is classified as business travel may vary between organisations. A common frame of reference is therefore preferable for guiding action across the Partnership and other organisations in the city.

Aspects to include in a common set of guidance raised at the MCCP organisation target setting workshop were:

1. Alignment of reporting cycles – i.e. whether data is measured and reported on the basis of a financial, academic or calendar year reporting cycle
2. Clear scope of gases and conversion factors for reporting
3. Agreed reporting for meeting the actions from the common travel commitment
4. For organisations operating across Greater Manchester (GM), alignment between Manchester and GM is preferable
5. Agreeing a reference year for the on-site energy use target
6. Whether a retail basis for accounting for electricity emissions (e.g. green tariffs) can be used to measure emissions
7. The use of market based measures such as carbon offsets to meet targets

Some preliminary proposals for these guidelines, reflecting on the methodology behind the Manchester carbon budget are:

1. **Alignment of reporting cycles:** The BEIS sub-national energy CO₂ dataset used for the city-wide baseline is based on a calendar year cycle, as is the carbon budget and the city's overall carbon reduction performance. However it is not necessarily an issue if organisational reporting cycles do not synchronise with this. On the basis of the workshop however it is important that across the organisations setting targets have common agreed measurement and reporting cycle.
2. **Clear scope of gases and conversion factors for reporting:** To clarify the scope and emissions factors in reporting it is recommended that where possible organisations report their total onsite energy use by fuel (e.g electricity, gas and heating oil) and MCCA apply a common conversion factor. A further technical discussion on heating value, combined heat and power and onsite renewables generation may be needed to clarify a common approach to aspects such as these. The MCCP should also agree an appropriate determination on tenant and landlord reporting of energy related emissions. A key recommendation from the workshop is to align the reporting against targets with existing data collection demands and reducing administrative burden. Submitting annual energy usage (as kWh) aggregated for all of an organisation's buildings within Manchester should align in part with existing reporting requirements.
3. **Agreed reporting for meeting the actions from the common travel commitment:** Setting commitments to common actions on travel will require an agreed approach for not only setting the actions but reporting on their completion. This could take different forms including completion against a common scorecard. It was acknowledged in the workshop that different organisations are at different stages in their development of a travel strategy and being able to monitor performance. Sharing of experience, ideas, resources and data assessment techniques will support all organisations to help each other towards the common commitment. This may include organisations acting together for shared 'asks' from transport providers and council planners.
4. **Alignment between Manchester and GM:** The Manchester carbon budget follows the same methodology as the GMCA carbon budget and therefore in this aspect there should be alignment between local and combined authority targets and actions.
5. **Agreeing a reference year for the on-site energy use target:** The on-site energy emission target proposed in this review recommends organisations reduce energy related CO₂ emissions from their buildings in line with the projected Manchester carbon budget. This entails organisations making a relative reduction in their emissions against a reference year (e.g. a 70% reduction in emissions by 2025 compared to 2015 emissions). The reference year used in the Manchester and Greater Manchester carbon budget reports [1, 2] to track relative emissions reductions aligned with the budgets is 2015 (the year the Paris Agreement was first declared). A common baseline is important for this target, but there may be different reasons that organisations have for preferring a different baseline year. Pegging the reference year to the Paris Agreement is a potentially practical option in this regard.
6. **Basis for accounting for electricity emissions used to measure emissions:** The BEIS sub-national energy CO₂ data accounts for national grid emissions and is not adjusted to retail arrangements. Therefore green tariffs do not directly contribute to reducing the city's emissions. Therefore while green tariffs are positive way to use procurement to improve sustainability⁴ it is not advisable to adopted green tariffs as equivalent to zero

⁴ Where a "green tariff" supports investment in renewables this is a positive step that contributes to reducing emissions across the electricity grid as whole. This can indirectly support the city target as well as

emissions electricity. A different consideration may need to be made for time-of-use tariffs that dynamically shift electricity use to periods of high renewables output. This is an emerging area to be reviewed.

- a. PV generated onsite and used by the organisation (self-consumed generation) would be counted as reduced emissions for the building (therefore the organisation), PV generation exported to the grid (receiving export payment) would be counted towards the decarbonisation of the national grid and not counted as a direct reduction in the buildings energy emissions.
7. **The use of market based measures such as carbon offsets to meet targets:** The Manchester carbon budget does not include the use of offsets as a contribution to Manchester staying within its carbon budgets. Therefore offsets at the organisation level cannot be counted towards meeting the Manchester targets.

Conclusion

This review considers how organisations in Manchester can align their actions to reduce carbon dioxide emissions (CO₂) with the city's carbon. The report recommends a toolkit-based approach, initially covering buildings and transport related emissions in the city. The proposed arrangements for onsite energy use in buildings and travel attempt to provide an easy to implement framework for setting a common approach within the city for actions that are ambitious and timely enough to meet the city's carbon budget. The key recommendations from this report are that organisations:

1. Take a 'toolkit' approach to promoting actions, with targets for on-site energy use based on the Manchester carbon budget projection and a commitment to common actions on transport emissions matching the ambition of the Manchester budget.
2. Have common guidance for setting targets, commitments and best practice across organisations in the city.
3. Facilitate knowledge, experience and data sharing.
4. Adopt a simple reporting framework. For example the on-site energy emissions target annual building energy use data could be submitted to a central body like MCCA to calculate emissions using a standardised approach

Further work by the Partnership will be needed to agree and define relevant details for implementing or amending the recommended set of toolkit targets and commitments.

national decarbonisation. However, the emissions intensity of the electricity grid is the same for all users whatever their retail tariff and so efforts to improve efficiency and reduce wasted energy are advised in all cases.

References

1. Kuriakose, J., et al., *Quantifying the implications of the Paris Agreement for Greater Manchester*. 2018, Tyndall Centre for Climate Change Research: [https://www.research.manchester.ac.uk/portal/en/publications/quantifying-the-implications-of-the-paris-agreement-for-greater-manchester\(d2e50584-952e-472b-a2b0-1c7e7d1651e1\).html](https://www.research.manchester.ac.uk/portal/en/publications/quantifying-the-implications-of-the-paris-agreement-for-greater-manchester(d2e50584-952e-472b-a2b0-1c7e7d1651e1).html).
2. Kuriakose, J., et al., *Quantifying the implications of the Paris Agreement for city of Manchester*. 2018, Tyndall Centre for Climate Change Research: <http://www.manchesterclimate.com/sites/default/files/Manchester%20Carbon%20Budget.pdf>.
3. Boardman, C. *Made to Move*. 2017.
4. Swift, S., et al., *Impact of the cycle to work scheme: evidence report*. Institute for Employment Studies, 2016.
5. Cairns, S., C. Newson, and A. Davis, *Understanding successful workplace travel initiatives in the UK*. Transportation Research Part A: Policy and Practice, 2010. **44**: p. 473-494.
6. IKEA. *Planet Positive: IKEA Sustainability Report*. 2018.
7. Cairns, S., et al., *Electrically-assisted bikes: Potential impacts on travel behaviour*. Transportation Research Part A: Policy and Practice, 2017.