

Reviewing Manchester's Climate Change Targets - DRAFT

Tyndall Manchester commissioned to review Manchester's climate change targets and recommend revised targets, as required, covering:

- 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

A Review of Manchester's Carbon Budgets for Direct /Energy-only CO₂ Emissions



Responding to Climate Change

Meaningful targets limit CO₂ emissions over time

Limit for total CO₂ (carbon budget) in line with a climate change target – e.g. Paris Agreement

Effort to reduce emissions (reduction rate) depends on remaining emissions in the carbon budget (effort so far)

Average reduction rate and start point determine point at which emissions reach near or actual zero

Scope of Carbon Budgets

- Manchester's energy-only CO₂ carbon budget 2018-2100
 - Energy related emissions for all sectors within Manchester
- Making a fair contribution to meeting the objectives of the UN Paris Agreement on Climate Change
 - Well below 2°C
 - Equity principles
- Recommends
 - Total carbon budget of 15 MtCO₂ for Manchester (2018 to 2100)
 - An average 13% per annum minimum emissions reduction rate from 2018

Updates to the Carbon Budget Approach

Implications of the IPCC Special Report on 1.5°C for Manchester's carbon budget



Context to Carbon Budgets

- 2017/18 Tyndall Manchester produced recommendations for Manchester playing its fair part in the Paris Agreement
- The carbon budget in that report is based on IPCC Fifth Assessment Report (AR5)
- Recommended review in light of latest science
- IPCC SR1.5 updated synthesis report on understanding of the remaining carbon budget released Nov 2018
- Updated Tyndall Manchester carbon budget setting

IPCC SR1.5

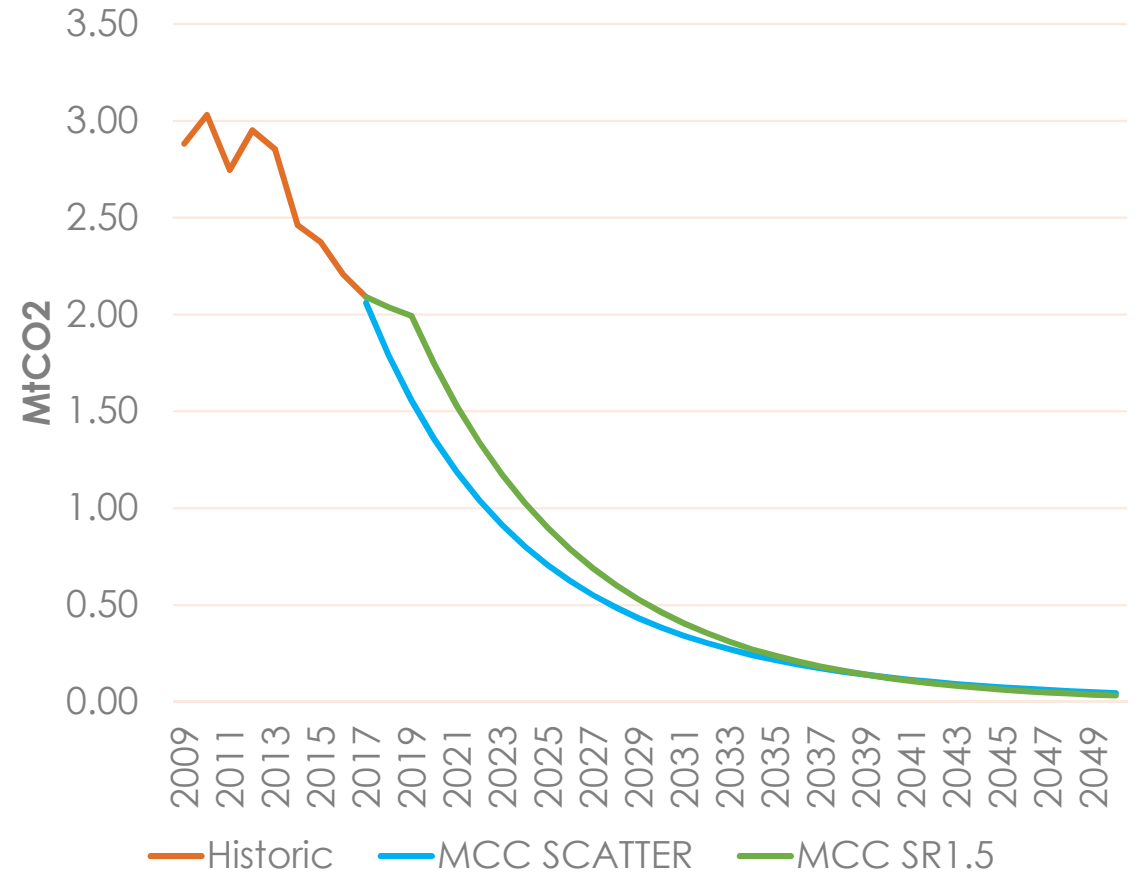
- Re-emphasis the critical importance of staying well below 2°C and urgent, wide ranging reductions in CO₂ emissions
- Latest understanding of relationship between CO₂ emissions and global temperature changes
- Larger remaining global carbon budget for temperature targets than in AR5
- Uncertainty in effect of non-CO₂ gases and feedbacks on remaining budget important to consider

Updated Tyndall Carbon Budget

- Retain Paris Agreement framing
 - Equity principle
 - 'well below 2°C pursuing efforts to 1.5°C'
- Use IPCC SR1.5 for remaining global carbon budget
- Revised estimate of global cement process emissions
- Reclassification of some developing nations

Comparing Carbon Budgets

- The updated approach carbon budget is 18 MtCO₂ for 2018 to 2100 compared to the current 15 MtCO₂
- This is 19% larger
- 2018/19 are historic emissions in updated approach.
- Updated budget reduction rate (12%) begins in 2020



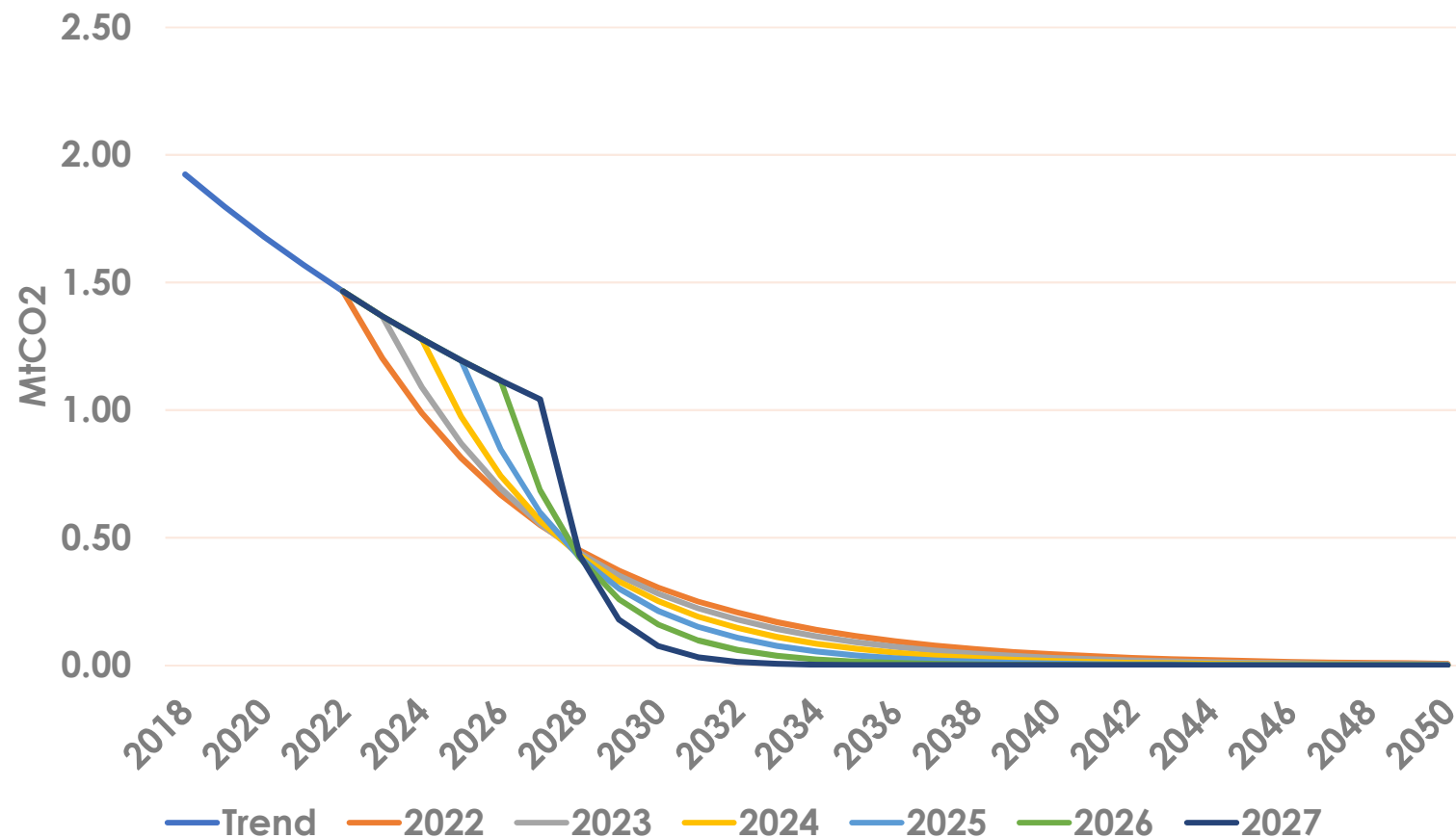
Comparing Carbon Budgets

Reduction in Emissions from 2015 level	MCC AR5	MCC SR1.5
2020	43%	27%
2025	70%	62%
2030	84%	81%
2035	91%	90%
2040	95%	95%
2045	97%	97%
2050	98%	99%

Energy-only CO ₂ Budget by Time Period (MtCO ₂)	MCC AR5	MCC SR1.5
2018-22	6.93	8.64
2023-27	3.59	4.57
2028-32	1.95	2.35
2033-37	1.10	1.21
2038-42	0.64	0.62
2043-47	0.38	0.32
2048-2100	0.59	0.34
Total	15.17	18.07

Budgets, Rates and End Years

Delayed action means faster reductions in future and earlier zero year to stay within the same carbon budget



Budgets, Rates and End Years

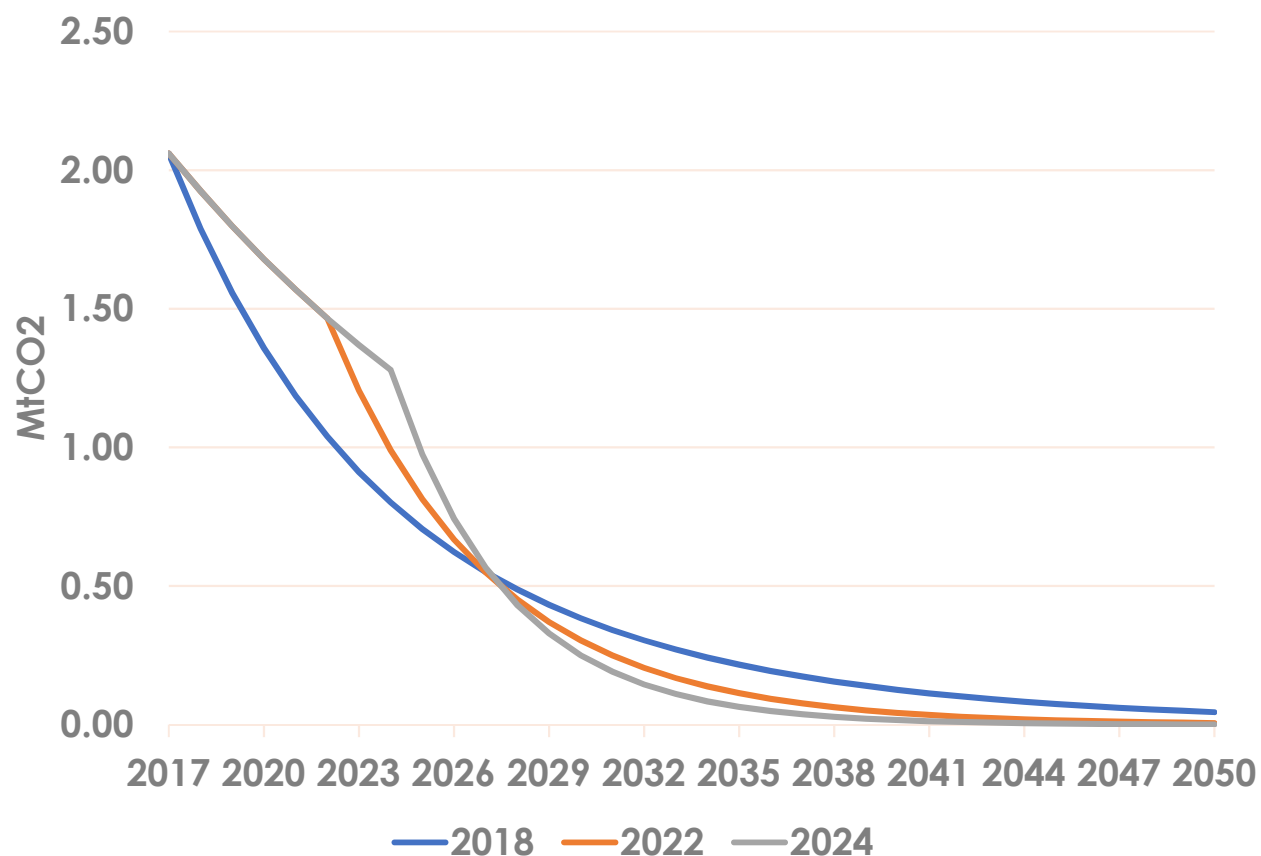
Examples for 15 MtCO₂:

Delayed action to 2022

- 18%/yr reduction
- Zero carbon in 2033

Delayed action to 2024

- 25%/yr reduction
- Zero carbon in 2030



Zero Carbon in 2030

- Carbon emissions over time (budget) primary significance
- An end date alone is insufficient for effective target setting
- Tyndall Manchester carbon budget sets maximum amount of carbon recommended to meet 'well below 2°C'
- Immediate implementation of rapid reduction rate essential for meeting carbon budget – delay has risks
- Alternative targets are only suitable if
 - a. Accompanied by a carbon budget less than the recommended maximum budget
 - b. Reduction rate is greater than 13% per year

Draft Recommendations

1. Retain the existing 15 MtCO₂ carbon budget
 - Below the maximum recommended budget in updated carbon budget - shows ambition and leadership
2. Revisit carbon budgets in five years or in response to a new scientific synthesis report
3. Focus on above 13% per annum reduction rate and meeting interim budgets
 - Increased reduction rate from 2020 onwards needed if 2018/19 are below 13% yearly reduction
 - Delaying rapid reductions further makes budget increasingly challenging

Thank you

Questions?

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