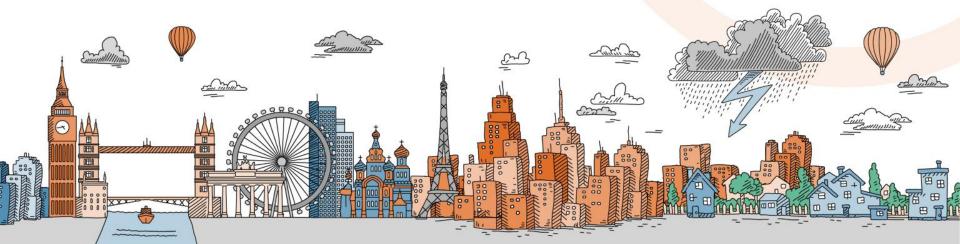


# What does a climate emergency mean for us?

Professor Alice Larkin Head of School of Engineering & Tyndall Centre Researcher EAUC, November 2019



# Overview

- The science bit
- From Global to Local
- What the emergency looks like for us
- Where do we start?
- Our elephants!





# Lower mitigation

# Higher adaptation

# Influencing the future Decisions made now in charge Adaptation Ne Gagation te charge adaptation Me Gagation te charge adaptation Charge adaptation to the charge adaptation Charge adaptation to the charge adaptation Charge adaptation to the charge adaptation

# **Global goal – Paris Agreement**

... hold the increase in global average temperature to

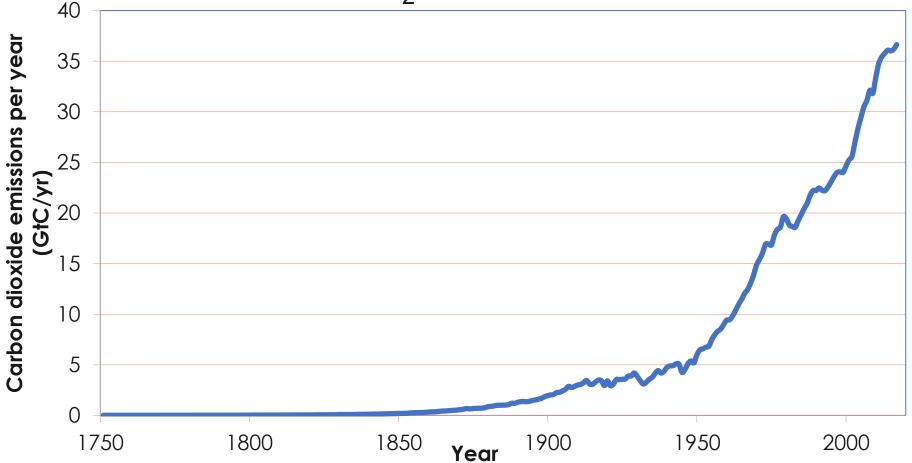
efforts to limit the temperature increase to 1.5°C

...rapid reductions in accordance with best science

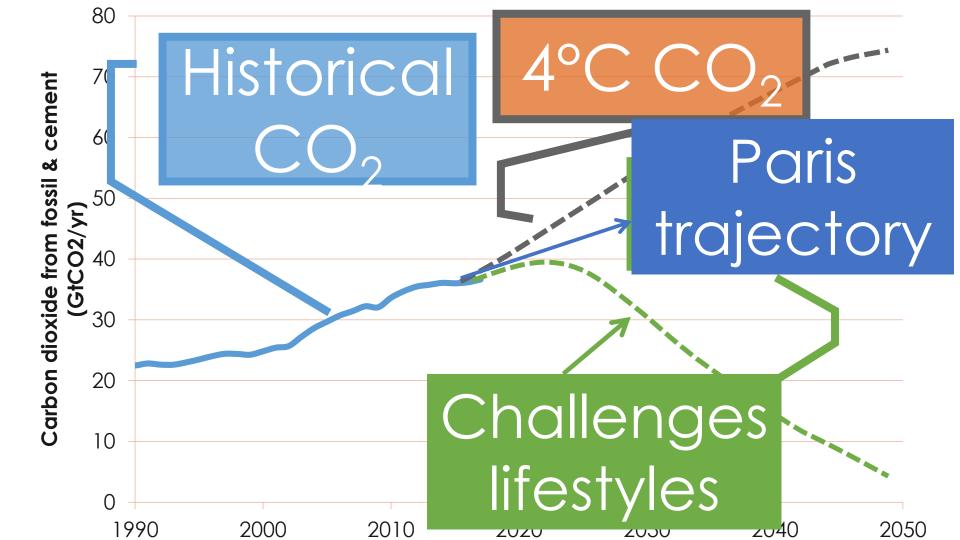
...on the basis o equity and efforts to eradicate poverty.



# Global CO<sub>2</sub> emission trend



Data: Global Carbon Project update, 2014, Boden, T. A., Marland, G., and Andres, R. J.: Global, Regional, and National Fossil-Fuel CO2 Emissions, Carbon Dioxide Information Analysis Center, Oak Ridge

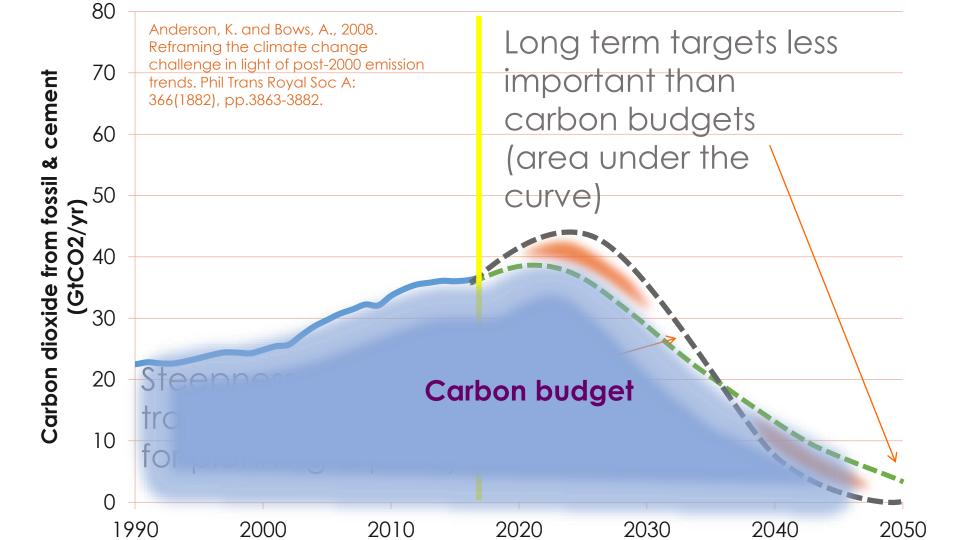


# Current context on climate change

- Paris Climate Agreement 2 & 1.5 degrees
- Net zero 2050 commitment UK level
- Calls for more urgent transformation after slow progress now pervasive – Bank of England to School Strikes
- Over half of UK local authorities have declared 'climate emergencies'
- Extinction Rebellion, School Strikes, National Citizens Assemblies. Organisations wanted to set science based Paris aligned targets.

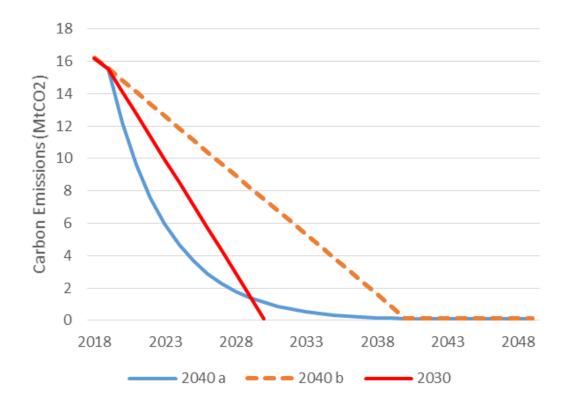
# Scientific context

- The primary driver climatic change in coming decades is CO<sub>2</sub>
- Global temperatures are directly linked to increased cumulative CO<sub>2</sub> emissions from human activity (primarily from energy use)
- Global temperatures have already risen by around 1°C
- Significant loss of ecosystems and biodiversity, increased human health/economic impacts at 1.5°C, impacts considered to be 'dangerous' at 2°C
- Urgent and transformational wide scale change in the energy sector is needed
- Carbon budgets are used to inform strategies limiting CO<sub>2</sub> emissions inline with meeting climate change goals



# Carbon Limits & Target Years

- The same end point target can have different climate change implications.
- Earlier 'zero' year can have more CO<sub>2</sub>
- CO<sub>2</sub> emissions in the red scenario are 20% higher than in blue



We are rapidly 'spending' the remaining carbon budget

CO<sub>2</sub> mitigation policies need deliver change in the *short-term* because emissions accumulate

# What does the climate emergency looks like for us?



# From Global to Local

Translating global temperature targets into local CO<sub>2</sub> budgets



# SCATTER project

**Setting** 

City

Area

Targets and

Trajectories for

**E**missions

Reduction



Collaboration with







Department for Business, Energy & Industrial Strategy

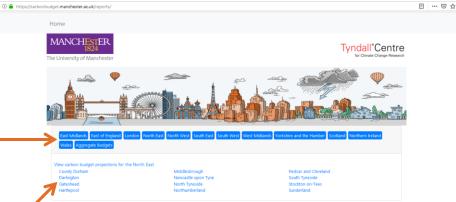


# Carbon Budget Setting Tool

# carbonbudget.manchester.ac.uk/reports/

## • Select the region

# • Select Local Authority



#### The Tyndall Carbon Budget Tool

#### Setting Climate Committments

The Tyndall Carbon Budget Tool presents climate change targets for UK local authority areas that are based on the commitments in the United Nations Paris Agreement, informed by the latest science on climate change and defined by science based carbon budget setting.

To view the recommendations for a region or an individual local authority, use the buttons and links above. The initial view of the report is a short-form version with some interactive elements designed for viewing on our vebsite. To print a copy, follow the link in the shortform report then print the page from your browser's menu (you can usually press *ctrl+p* as a shortcut for this. Most modern browsers provide an option to 'Save as PDF', or you can print a physical copy as normal.

We have also provided a means to create Aggregate Budgets for Combined Authorities, Unitary Authorities, County Councils and other combinations of local authorities. If the Aggregate Budget you are interested in is not available in the list above you can create a custom Aggregate Budget with our tool.

# GM approach – collaboration and innovation

- GM identified actions for their 5 Year Environment Plan
- Net zero in 2038; 15% pa cuts
- Clear call to all stakeholders to
- Don't yet have a pathway to zero - focus on delivering near term action

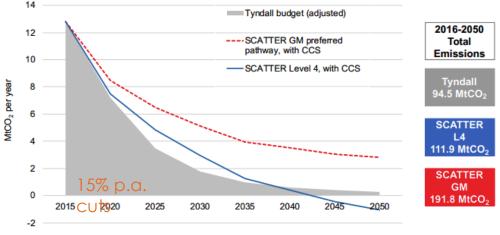


Figure 1 – Potential Carbon Reduction Pathways for Greater Manchester; Source: Anthesis

- Innovation 'gap' social, political, financial, regulatory, technology
- Opportunity to extend this Tyndall network & COP26

All institutions will struggle with the scale of this challenge – where do we start?

# University of Manchester Commitment

The University of Manchester believes that Manchester should stay within a sciencebased carbon budget that is aligned with the Paris Agreement and set 2038 as the target date to become a zero carbon city.

The University of Manchester believes that all organisations and residents in Manchester need to be part of a collective effort to meet our targets and commits to contribute by:

- Acting now, including accelerating our existing decarbonisation activities, wherever possible.
- Taking responsibility for the  $CO_2$  emissions from our business activities and working to reduce them to zero by 2038.
- **Supporting and influencing** our customers, residents, suppliers and other stakeholders to take action.
- Defining the support we need and proactively asking for it, including asking politicians for policy changes wherever relevant.

# Direct & Indirect ?

# Scope 1, 2 & 3 ?

Mandatory or Moral ?

# Much much more than infrastructure

Hierarchy of action

- 1. Reduce energy needs: question the what
- 2. Reduce energy needs: question the how
- 3. Improve energy efficiency: investing in technology
- 4. Decarbonising supply: onsite generation

# Where else can we influence **now**?

## • Buildings, infrastructure & facilities

e.g. enhanced maintenance programme, net zero new builds, carbon as KPI in all refurbishment, onsite & offsite generation, facility upgrades, procurement etc.

#### People & community

Disrupting norms around commuting; academic conferencing; field work & research practice; student exchange; life-long learning; on-campus behaviours

#### Education & student experience

Curriculum; campus biodiversity; staff-student networks; societies; halls

### Leadership & experimentation

Capacity building in research; financial decision making; divestment; governance & connections; living labs

# How<sub>5</sub>

### Reframing investment decisions

Taxing energy use; thinking beyond annual accounts; challenging dominant financial approaches; new business models

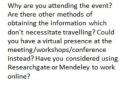
### Developing new policy & procedures

Choice editing procurement; providing alternatives; behaviour change programmes; CO<sub>2</sub> impact indicators in proposals; linking influence to accounts

### • Identifying & sharing where knowledge & finance gaps exist University networks; collaboration; civic connections; steering funders

# Example -Tyndall Travel Strategy

#### Points to consider:

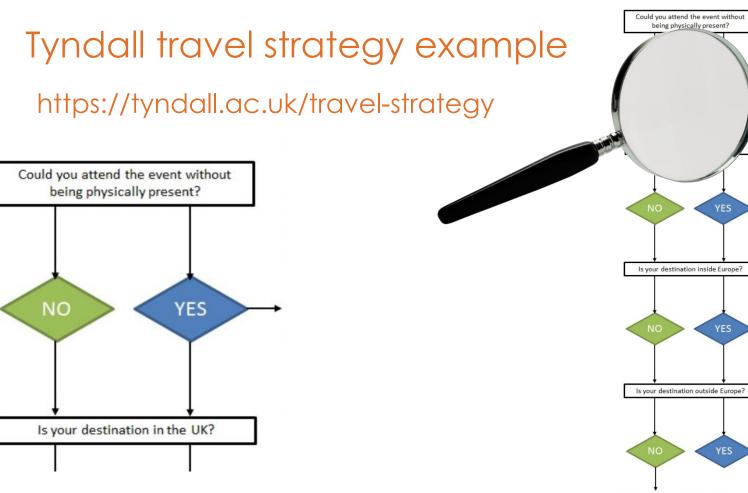


Do you need any support from Tyndall or your University to participate in a different format? Do any of the attendees in your field have established links with Tyndall that could be used for an introduction outside the event? Are you able to download podcasts of the event, or follow live tweets? Have you got access to software that will allow you to take part in teleconferences?

You may be surprised how little time and money is saved by flying you should consider how long the journey will take, including time spent at the airport waiting for the flight as well as any difference in cost before choosing your mode of travel.

For many destinations within Europe, the train is a feasible alternative to flying. There are online resources, such as www.seat61.com and www.loco2.org that will help you to calculate the length of your journey by train and plane. Consider any difference in price and whether any colleagues have made a similar trip who can offer advice.

It is unlikely that you have any other option but to fly, however could you combine this trip with other workrelated activities - could you spend time working at another institution to maximise the benefit of this trip? Consider whether the trip is worth the impact on the climate and time out of the office.



# Think creatively

-Decision trees for meetings

-Think about needs & synergies -Think about opportunities

# University influence extensive

- Students capacity building
- •Staff harnessing capability
- •Stakeholders & partners sharing & learning

Our 'climate change' credibility rests on changing our estate and our supply chain

# Our elephants

Academic & researcher connectivity Student mobility & international student numbers Research that maintains our fossil fuel lock-in Life-long learning if it is to increase mobility

# Our opportunities

Understanding the scale of the challenge Our people – seeking solutions Our living lab – testing & experimenting Our short & long-term influence: staff, student, civic



# Thank you

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