CAMBRIDGE ZERO CO_2

How can we create a resilient, sustainable future?

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@CambridgeZero

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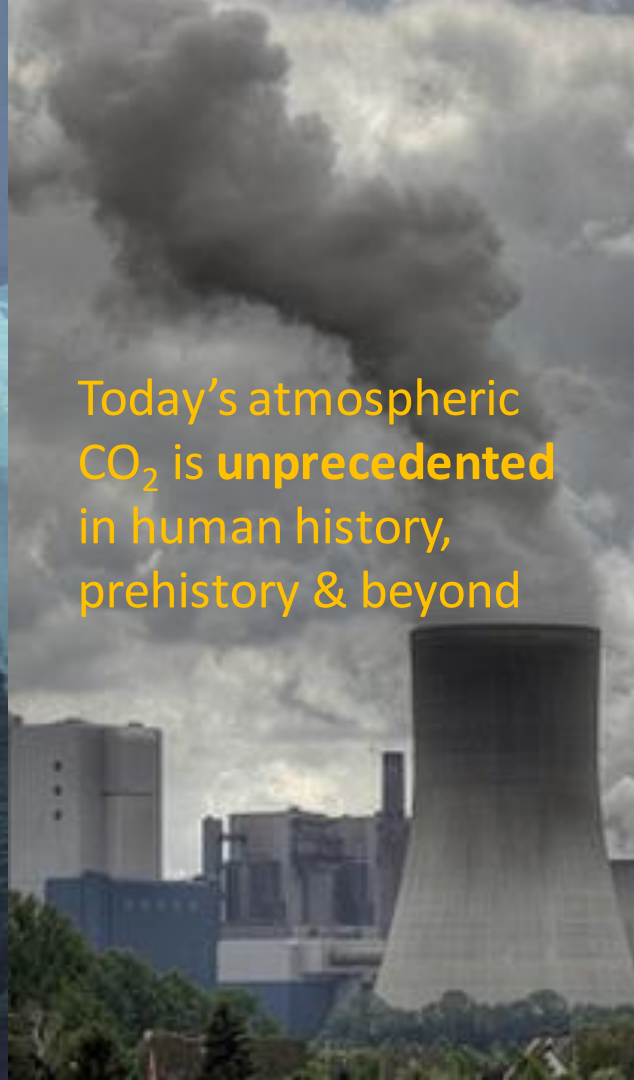
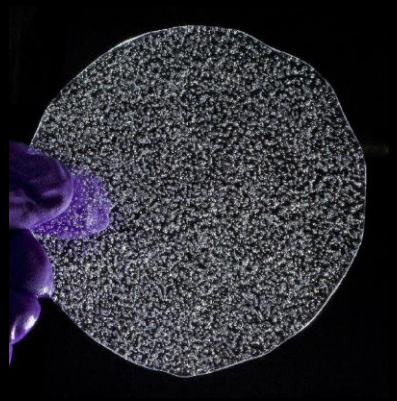
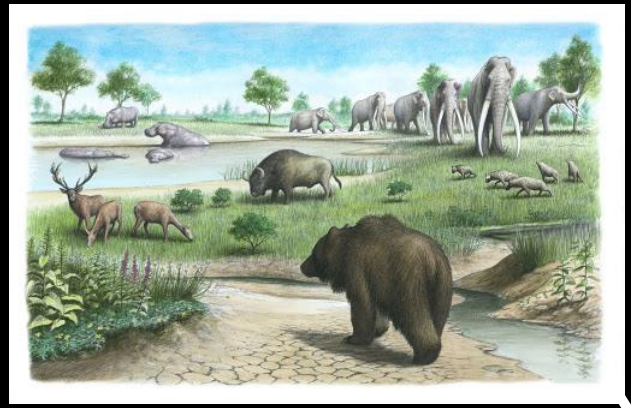
The world's richest 1% have more than **twice as much wealth** as 6.9 billion people.


1 million species at risk of **extinction** in the next decades


Today's atmospheric CO_2 is **unprecedented** in human history, prehistory & beyond





Scene showing plants and animals found as fossils in Barrington Beds (120, 000 years old) near Cambridge

400
380
360
340
320
300
280
260
240
220
200
180
160

CO_2 (parts per million by volume)

8 7 6 5 4 3 2 1 0 BC

Hundreds of thousands of years ago

Greenland & Antarctic ice loss and global sea level rise are **accelerating**

Temperatures are reaching **extremes**

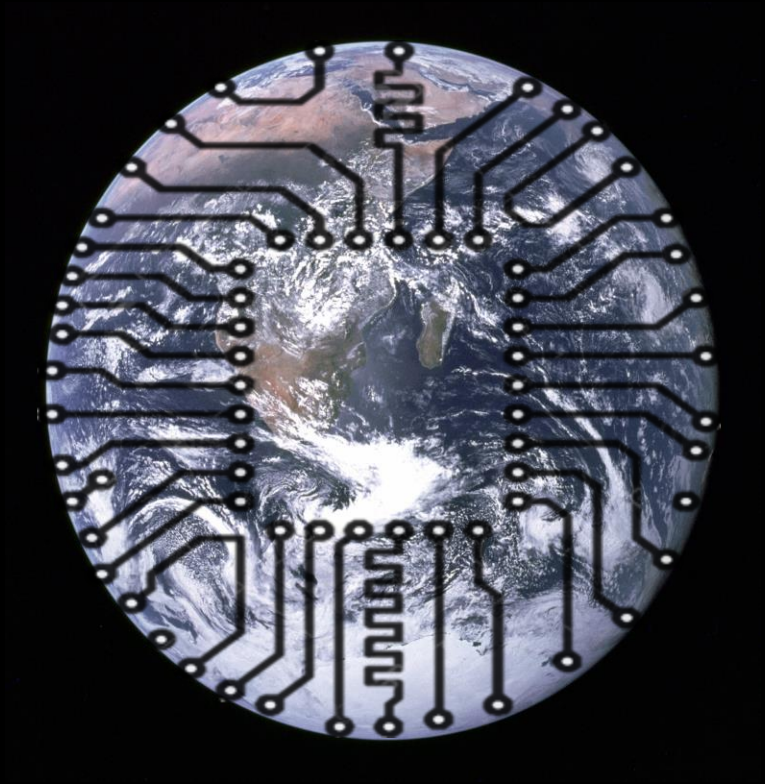
Ocean acidification is **soaring**

CarbonBrief
CLEAR ON CLIMATE

We are seeing **increased risk** of extreme weather around the world

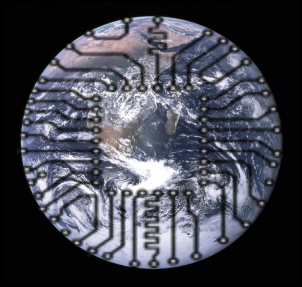
Role of computer science & technology

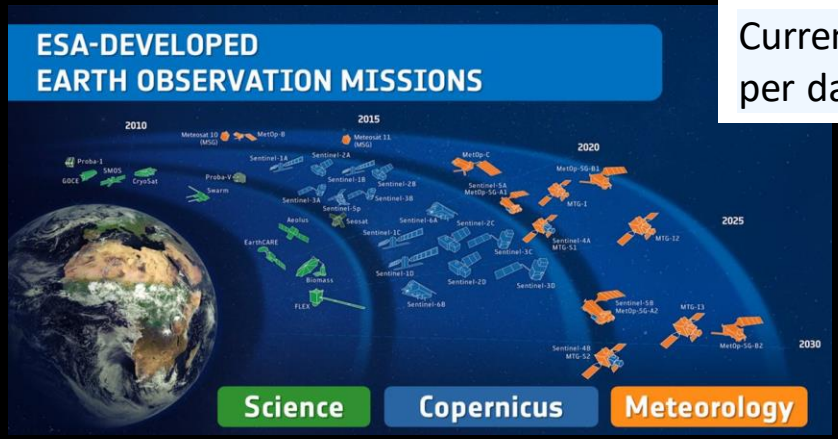
Assessing & monitoring the risks



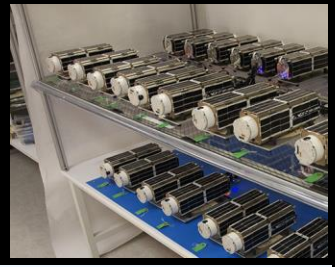
Contributing to sustainable solutions

Assessing & monitoring the risks



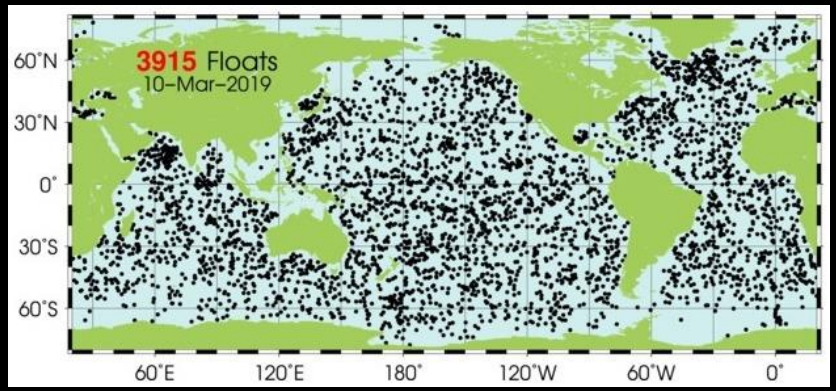


Currently > 10 TB data per day



fleet of 100+ satellites
~ 10 PB data

<u>Vast datasets</u> from satellites, networked sensors, computer simulations, crowd sourcing…



Autonomous instrumentation & sensor networks

Cambridge Climate Change Business Risk Index Specification

- Provides future likelihood of extreme events that exceed specific weather thresholds
  - Measured as **Disruption Days per year**

- With a **likelihood** of occurrence in a given year

90%	50%	10%	5%	1%
P90	**P50**	**P10**	**P5**	**P1**

- **Heatwave thresholds**: Variable disruptive temperature thresholds

25°C	30°C	35°C

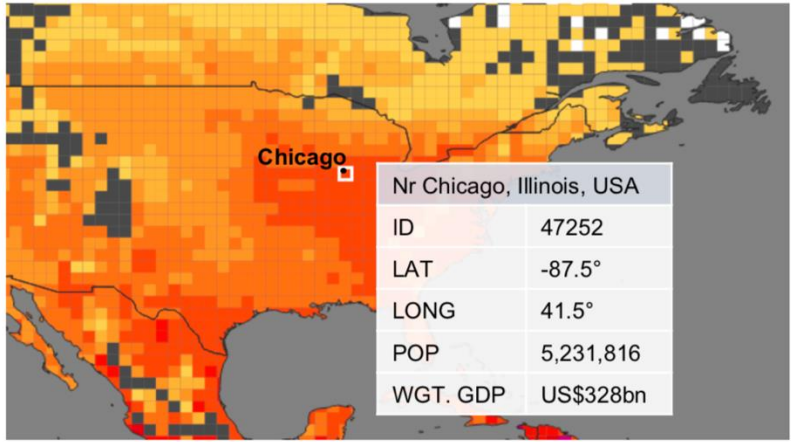
- Three **analysis views** (levels of business concern)

Level 1	Recent historical baseline from 1979-2019 local weather data	ERA5
Level 2	Climate Change Modelled View; four outlooks from RCPs	CMIP5
Level 3	Climate Change Model Stress Test accounting for tail risk	CMIP5

- Multiple **time horizons**

5 Years	20 Years
2025	**2040**

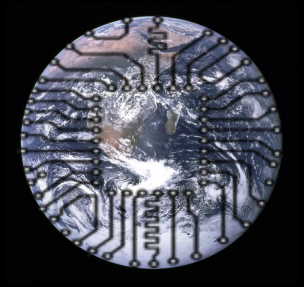
- **Global geography**
  - Global land coverage at 1° grid resolution
  - 18,800 grid squares
  - Referenced by lat-long coordinates of grid centre



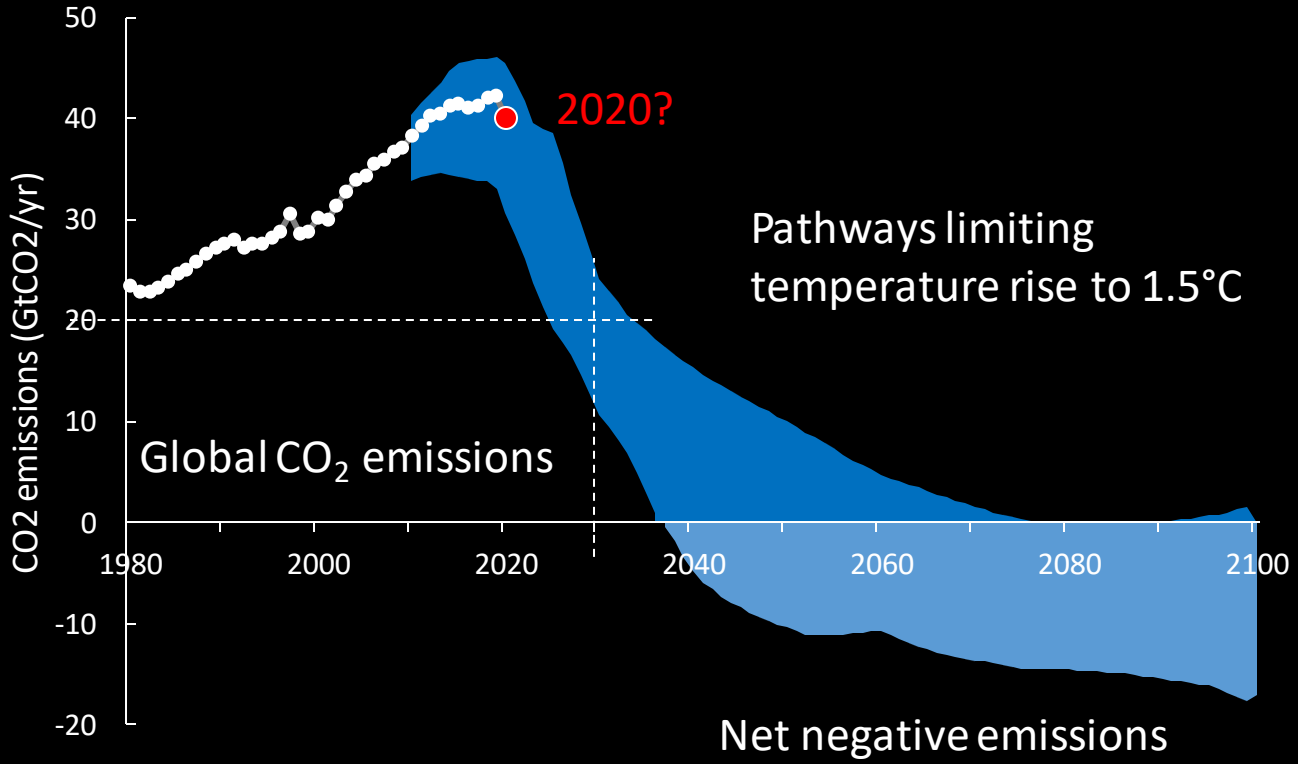
1,692,000 global data points for Heatwave

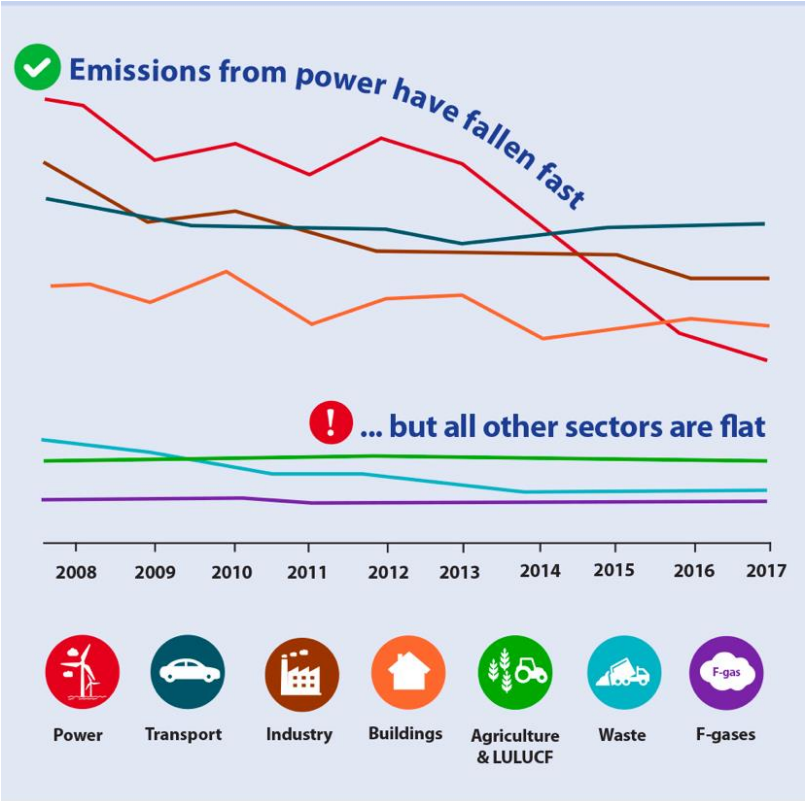
UNIVERSITY OF CAMBRIDGE Judge Business School | Centre for **Risk Studies**

Contributing to sustainable solutions



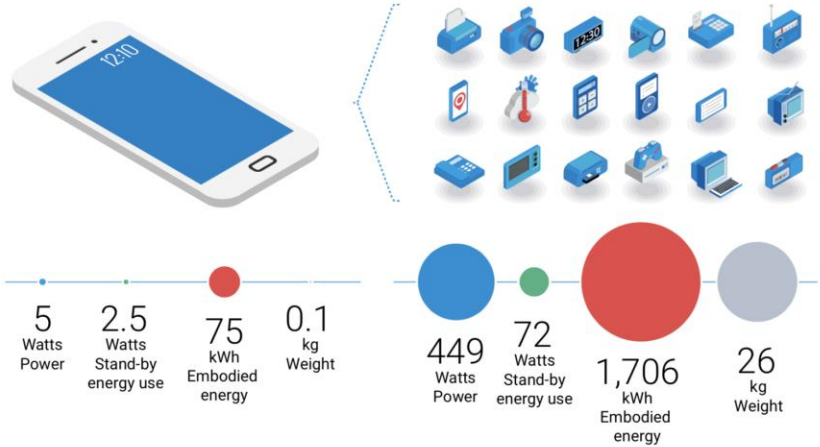
<u>Dramatic</u> emissions reductions are required over next three decades





Source: Committee on Climate Change

Figure 5.2. The energy and material benefits of accessing services via a multipurpose smartphone (left) over owning an array of single-purpose goods (right)



Source: UN Emissions Gap Report, 2019

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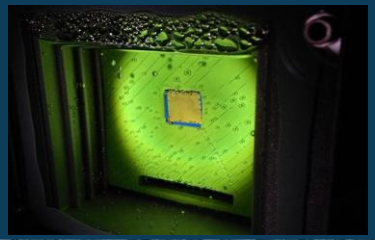
Responding through pioneering research

Zero-carbon energy transitions



Health and society

Resources and production

Resilient futures

Transport, cities and infrastructure

Carbon drawdown and climate repair

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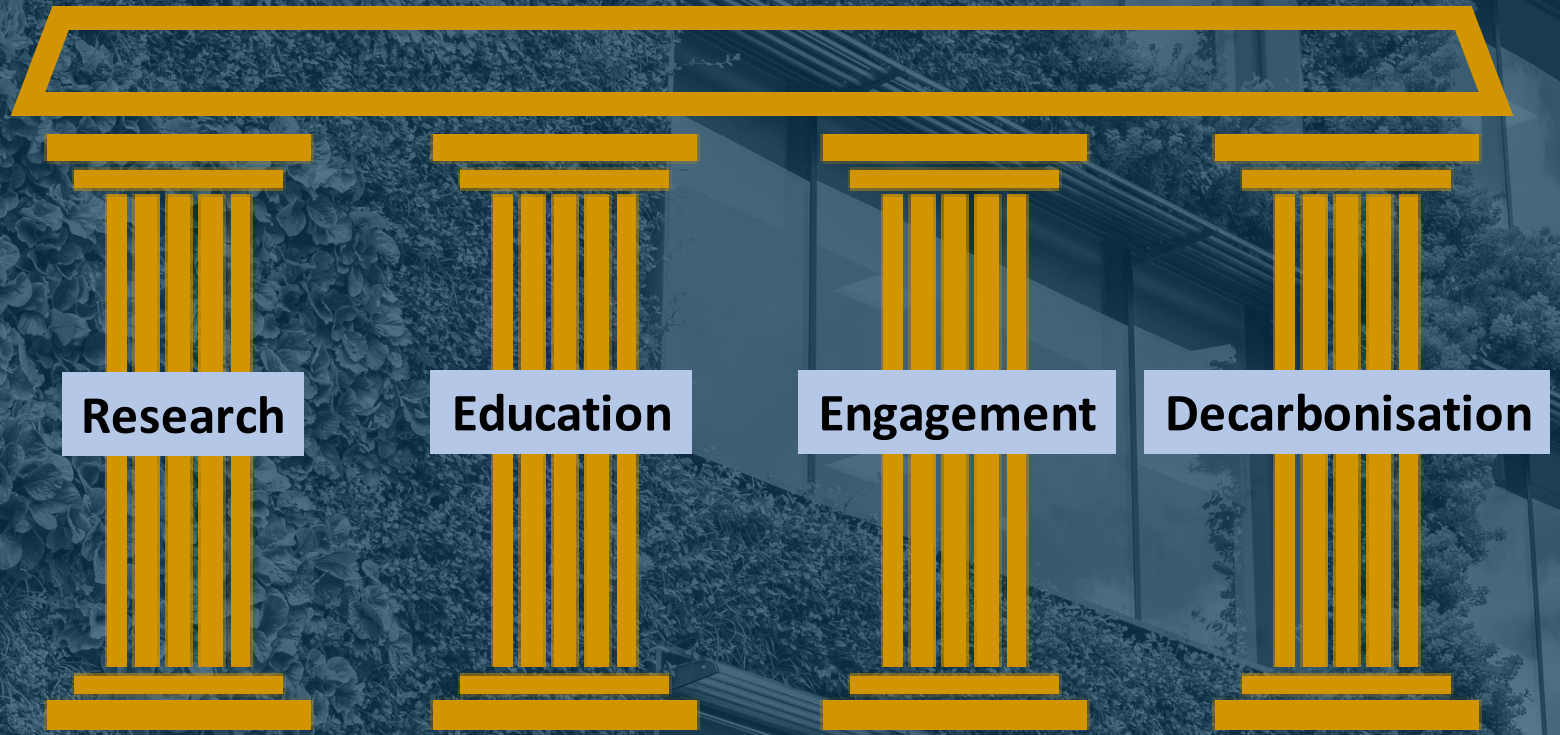


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