



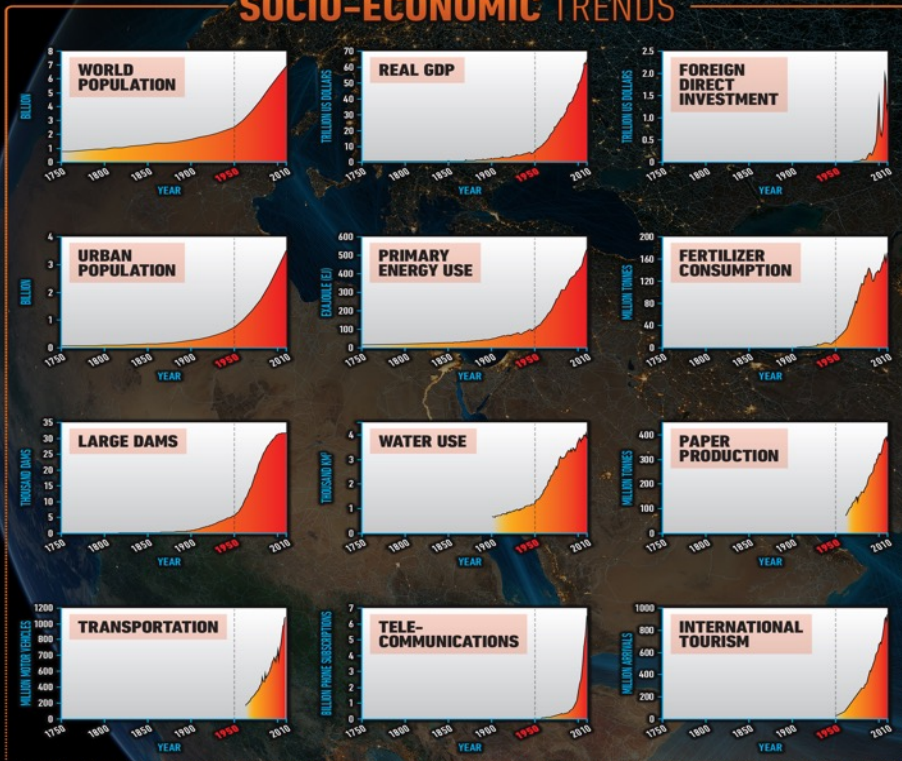
Image: Globaia

Put simply, planetary health is the health of human civilization and the state of the natural systems on which it depends.

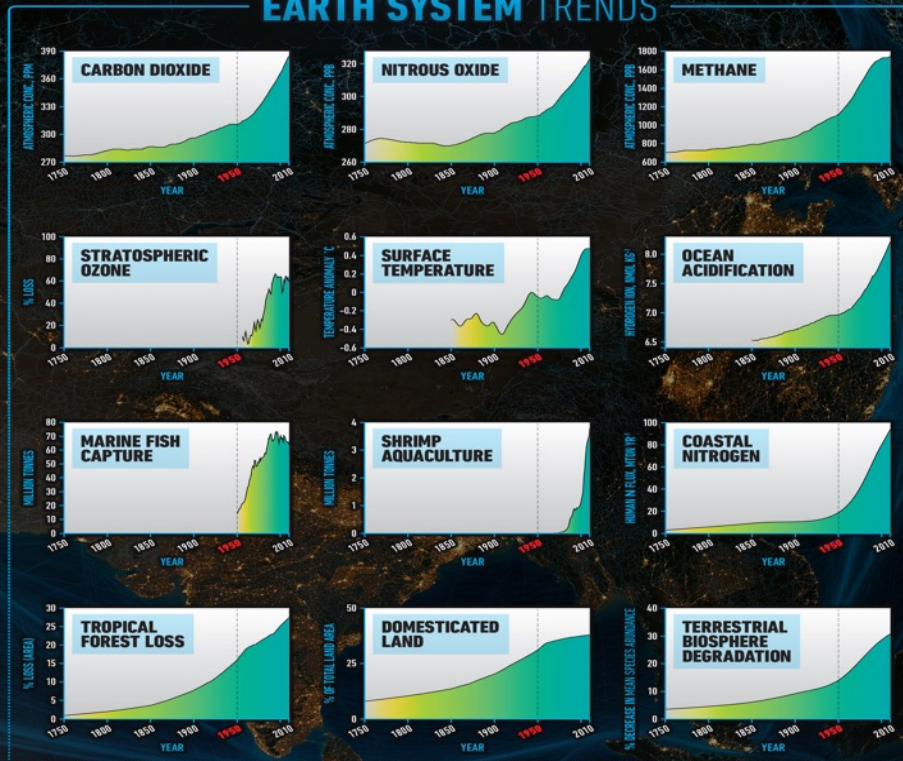
Evidence for the Anthropocene epoch

THE GREAT ACCELERATION

SOCIO-ECONOMIC TRENDS

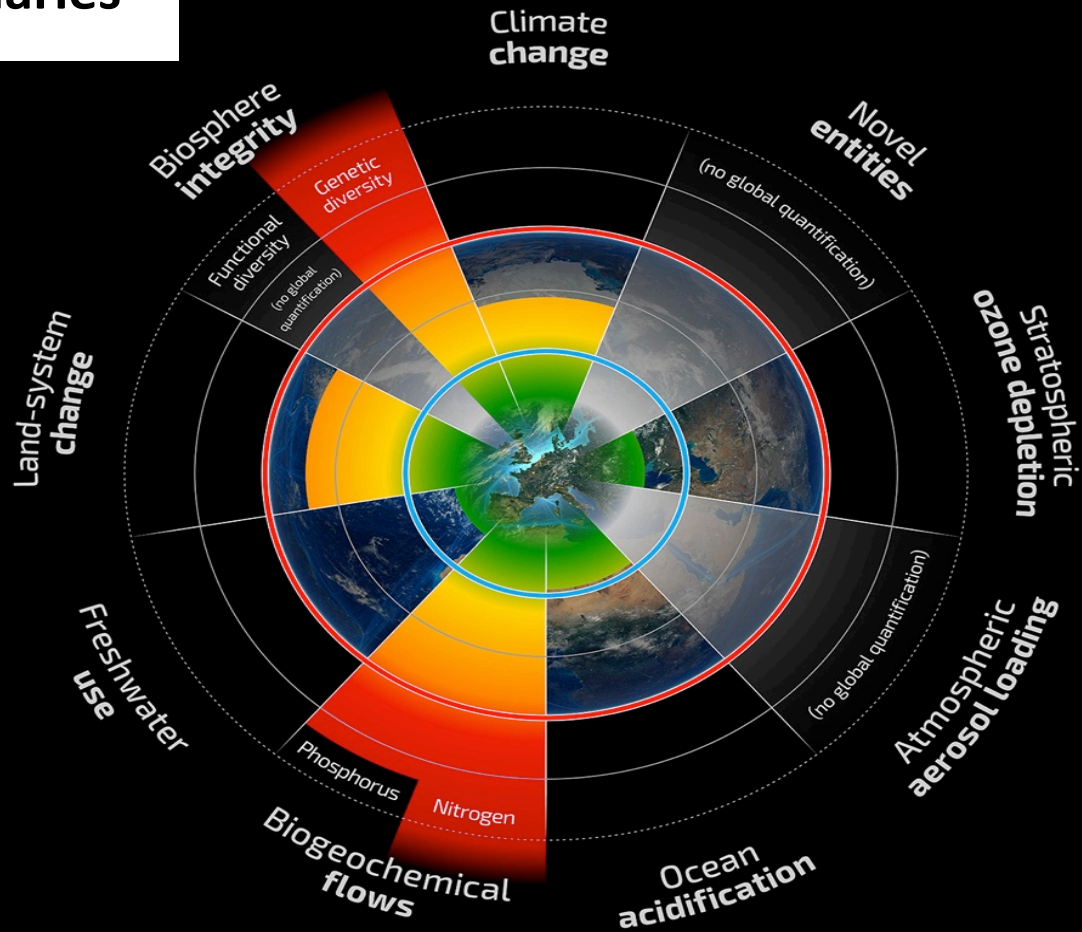


EARTH SYSTEM TRENDS



Planetary boundaries

(Steffen et al Science 2015)



Global average surface temperature change

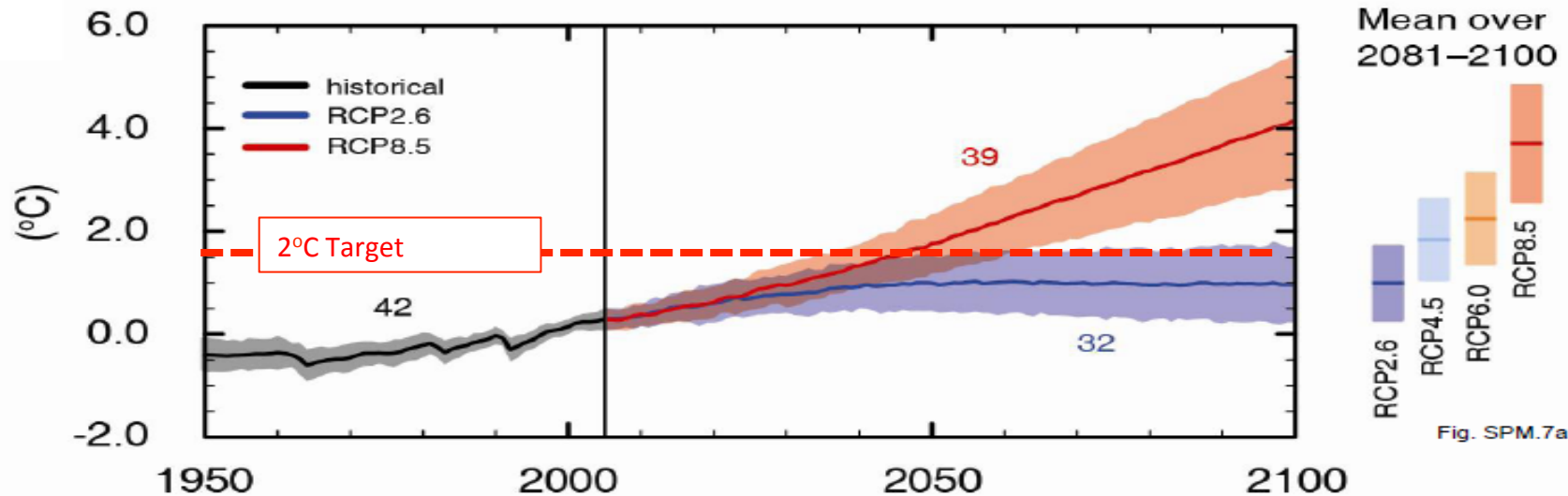
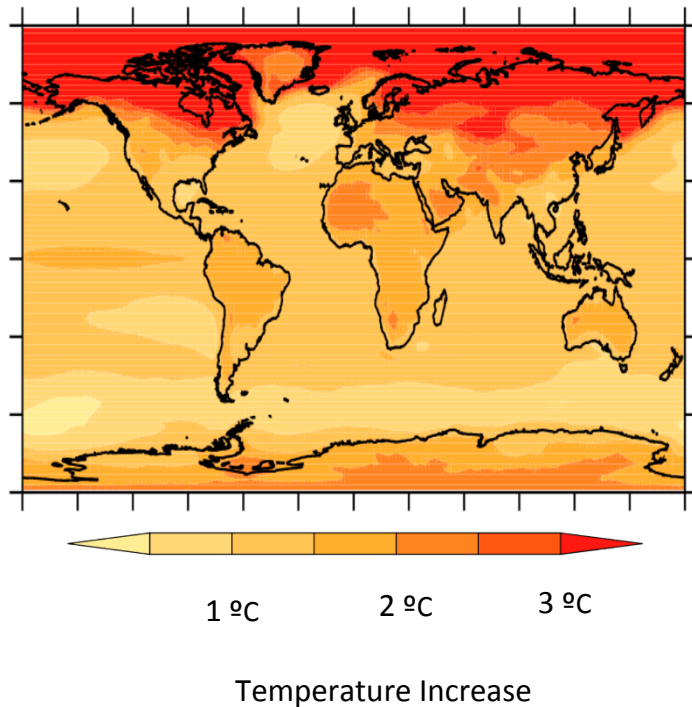


Fig. SPM.7a

Global surface temperature change for the end of the 21st century is *likely* to exceed 1.5°C relative to 1850 for all scenarios

Regional temperatures at 1.5C and rising risks



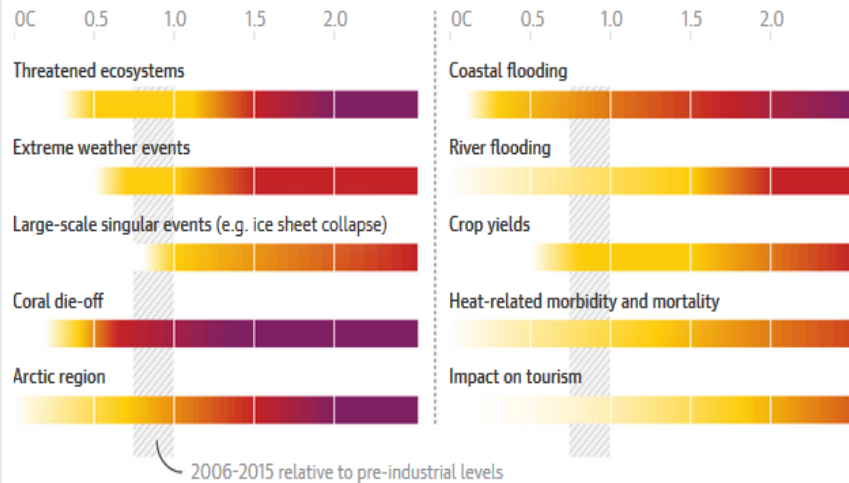
ClimateDann

Rising temperatures, rising risks

Key to impacts and risks

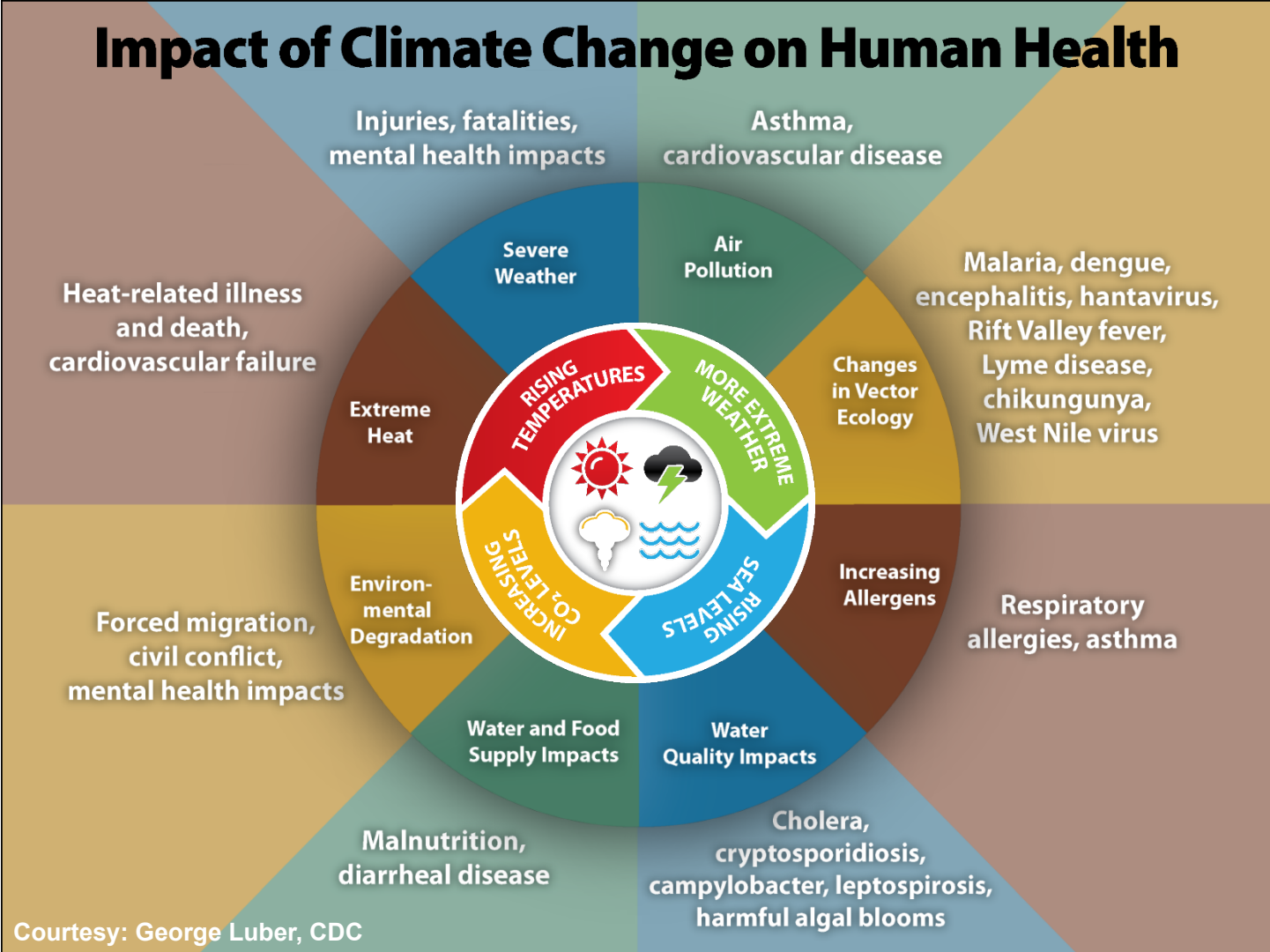


Global mean surface temperature change relative to pre-industrial levels, C



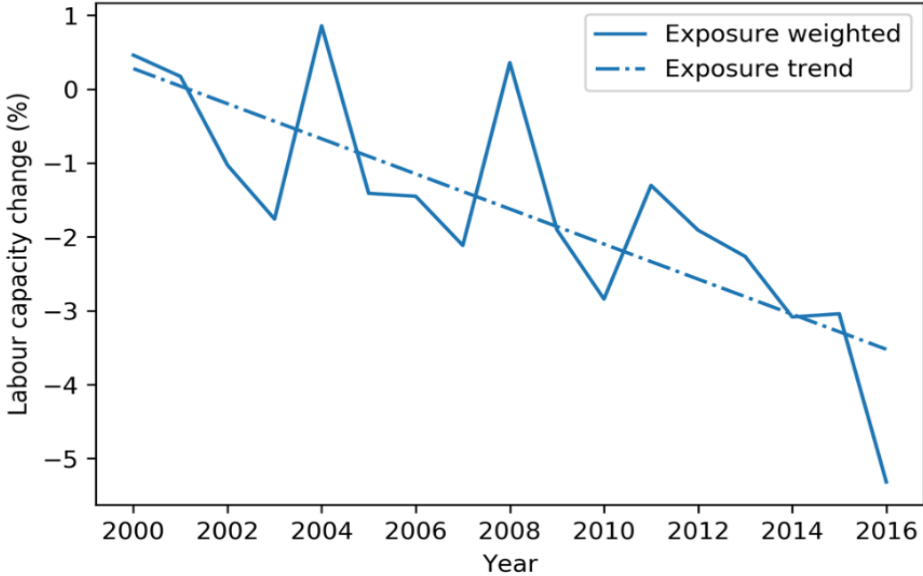
Guardian graphic. Source: IPCC Special Report on Global Warming of 1.5C

Impact of Climate Change on Human Health

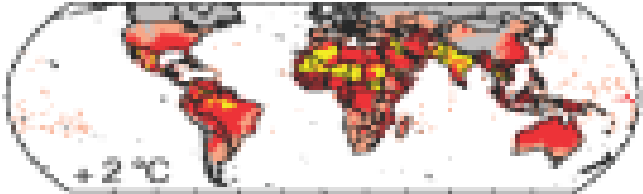
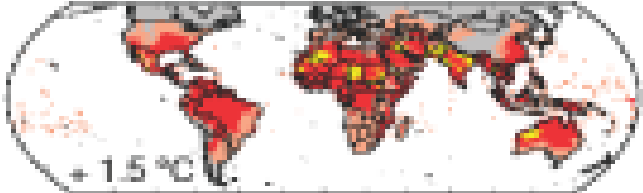


Global physical labour capacity decreased by ~ 5.3% between 2000 and 2016

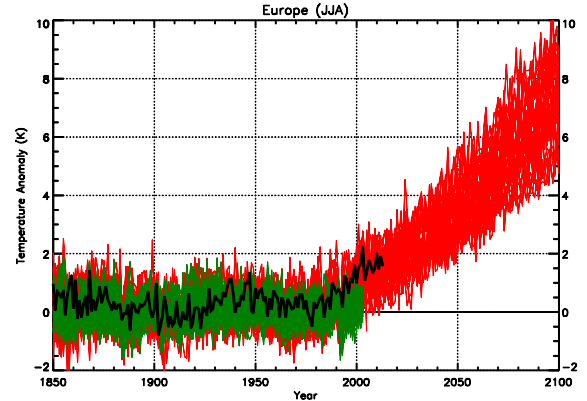
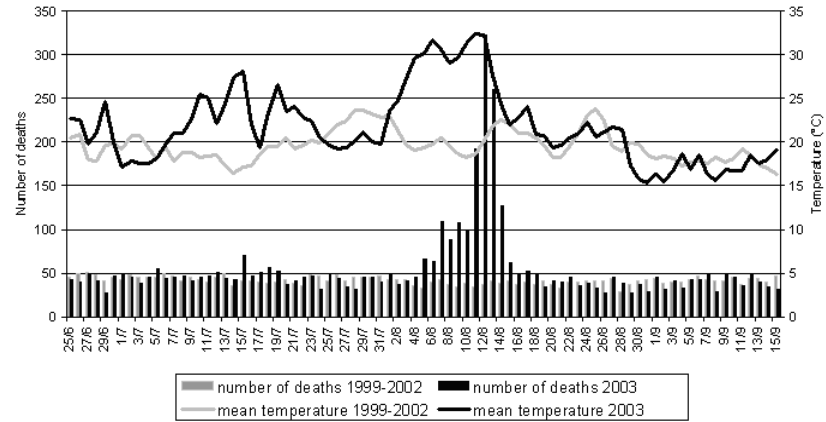
(Lancet Countdown 2017)



Climate change and increase in extreme heat exposure which prevents moderate intensity labour in the hottest month (Andrews et al in press)



France, August 2003 ~15000 excess deaths (~70,000 in Europe) Robine et al 2007



Excess deaths in Paris 1999-2002 vs 2003

European summer temperatures for 2003 to become the norm in coming decades

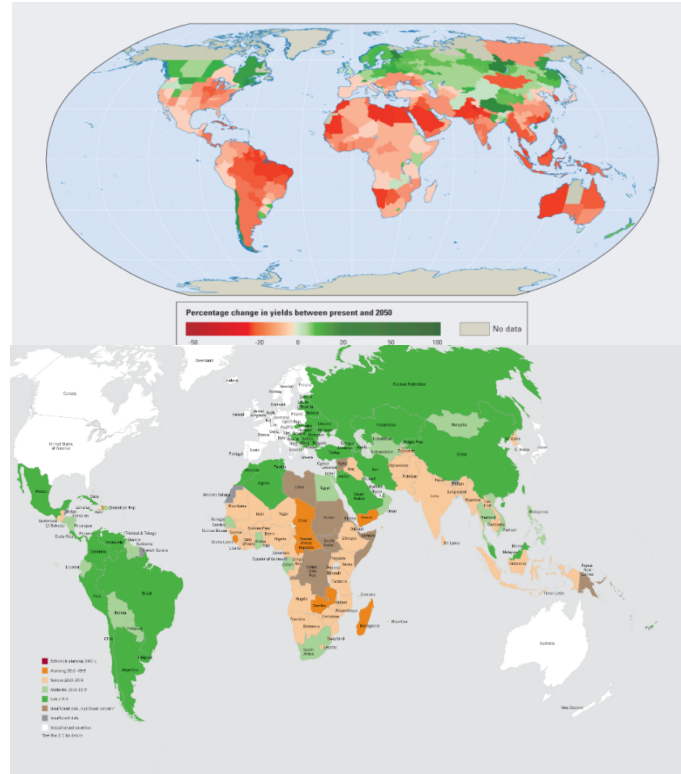
Climate change exacerbates food insecurity in areas currently vulnerable to hunger and under-nutrition. By 2050 : Net increase of ~ 530,000 nutrition related deaths p.a. worldwide
(Springmann et al Lancet 2016)

Impacts of climate change on the productivity of food crops in 2050

World Bank Publishers
World bank Development report 2010
<http://wdronline.worldbank.org/>

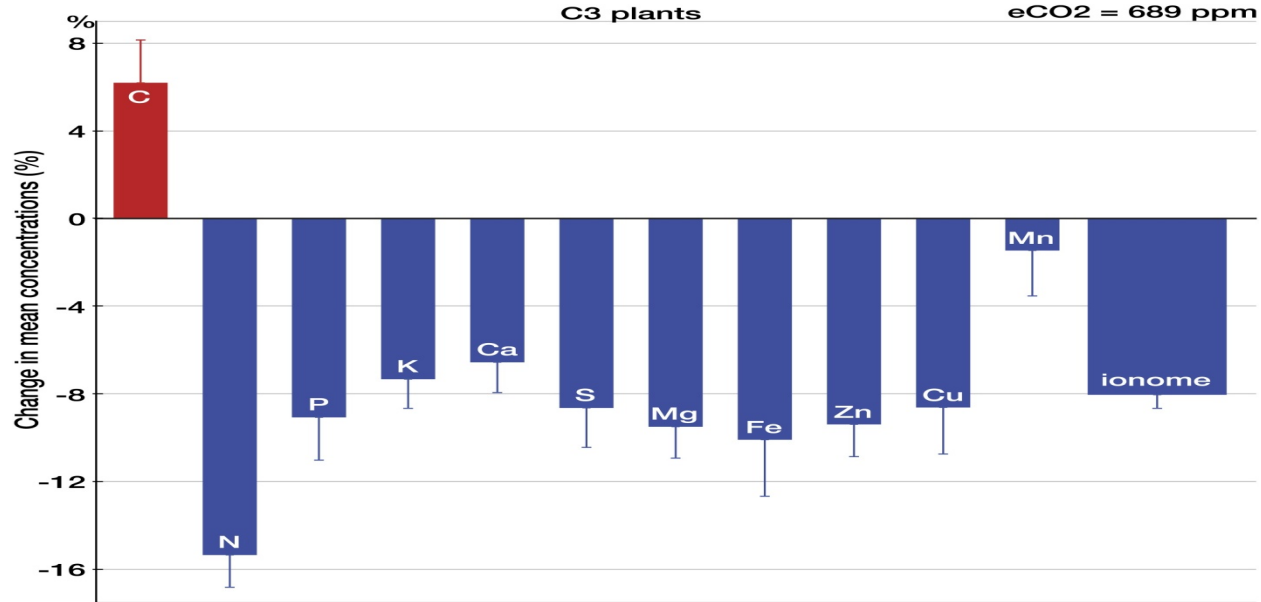
2016 Global Hunger Index

Welthungerhilfe, IFPRI and Concern Worldwide
2016 <http://www.ifpri.org/ghi/2016>



Carbon dioxide fertilisation reduces nutrient concentration- meta analysis of 7761 observations

(Loladze eLife 2014;3:e02245)



<http://elife-publishing-cdn.s3.amazonaws.com/02245/elife-02245-fig2-v3.jpg>

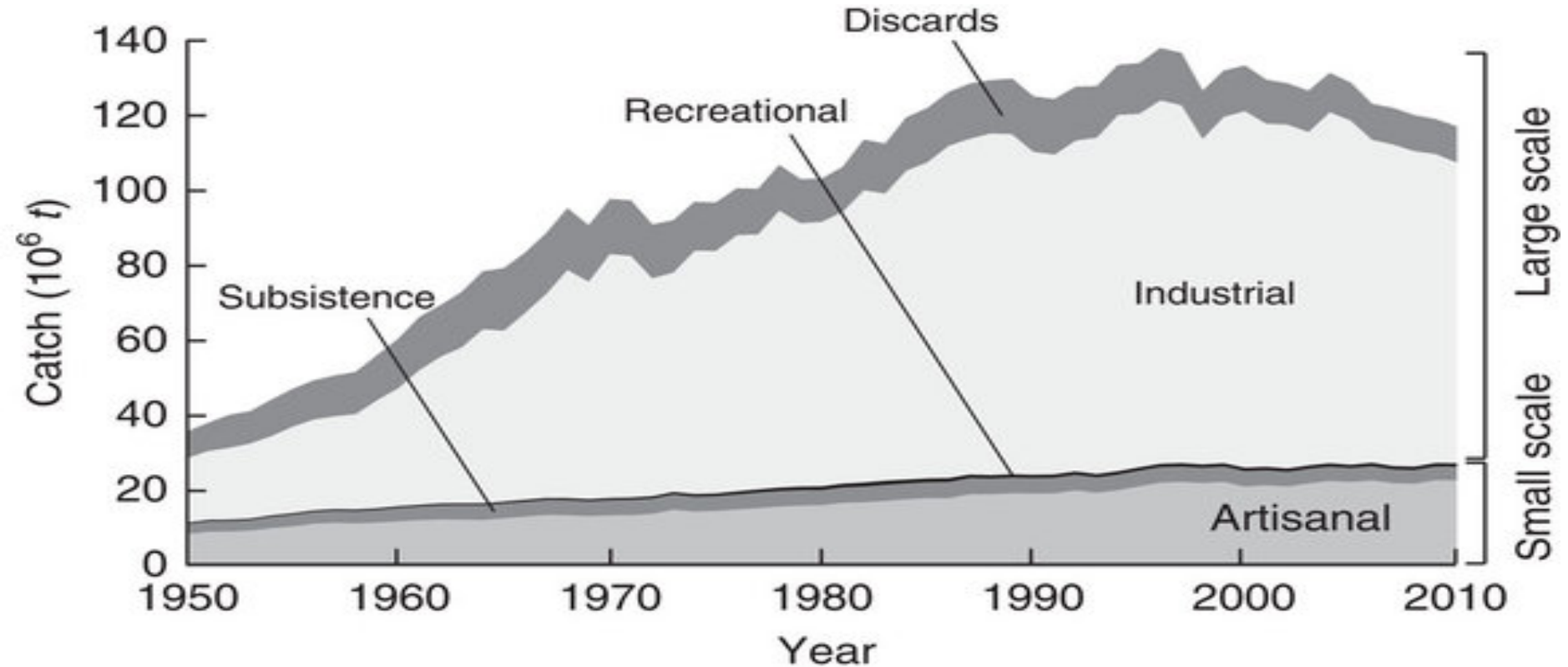
WATER STRESS BY COUNTRY

ratio of withdrawals to supply

- Low stress (< 10%)
- Low to medium stress (10-20%)
- Medium to high stress (20-40%)
- High stress (40-80%)
- Extremely high stress (> 80%)

This map shows the average exposure of water users in each country to water stress, the ratio of total withdrawals to total renewable supply in a given area. A higher percentage means more water users are competing for limited supplies. Source: WRI Aqueduct, Gassert et al. 2013

Fishery decline (Pauly and Zeller Nature 2015)



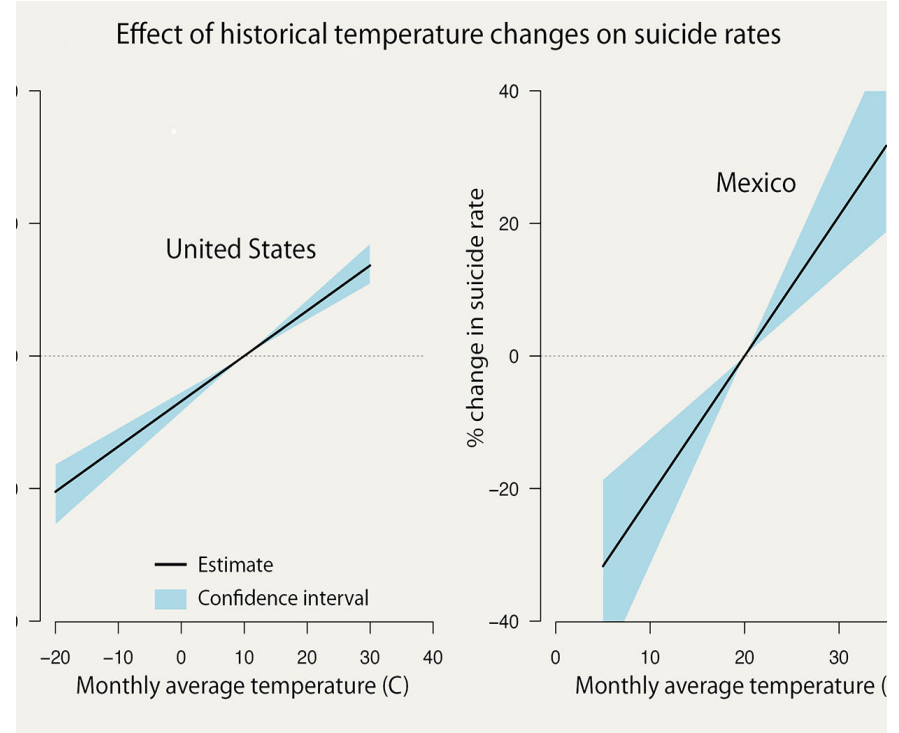
Mental health effects (e.g. Burke et al 2018, Ahern et al 2005)

Solastalgia is defined as, “the distress caused by environmental change”. Albrecht et. al. (2007)



Many studies have shown increase in common mental disorders for long periods after floods.

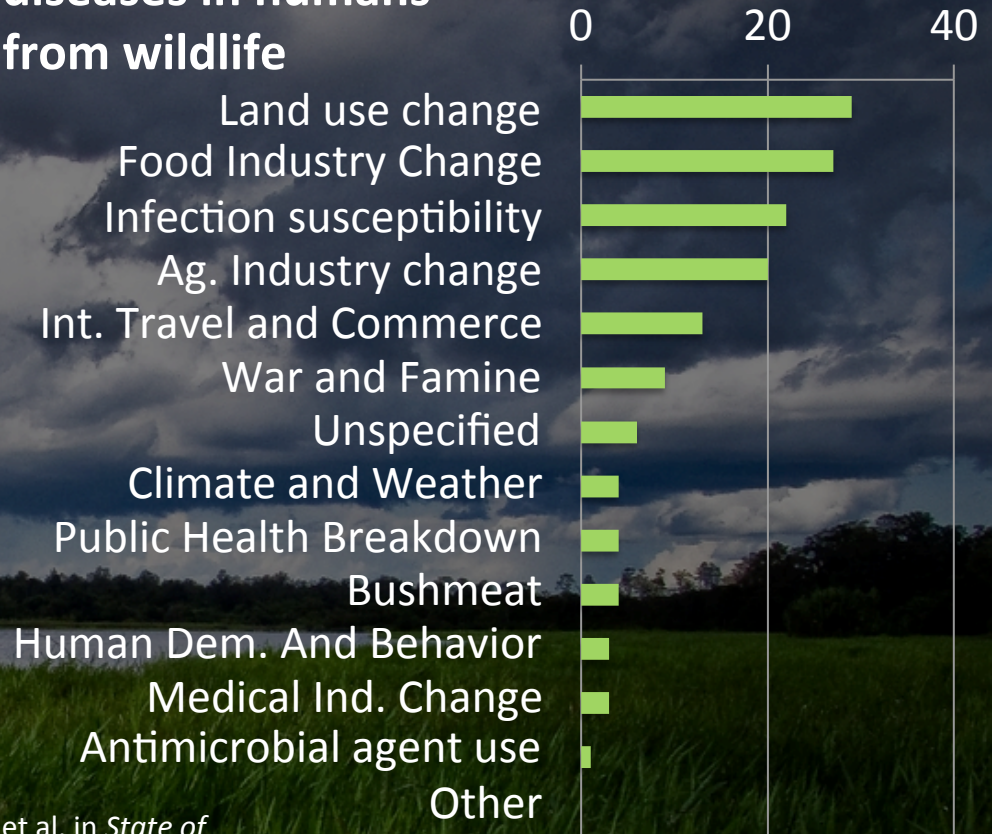
Rising Seas Could Affect 1.4 Billion People by 2060



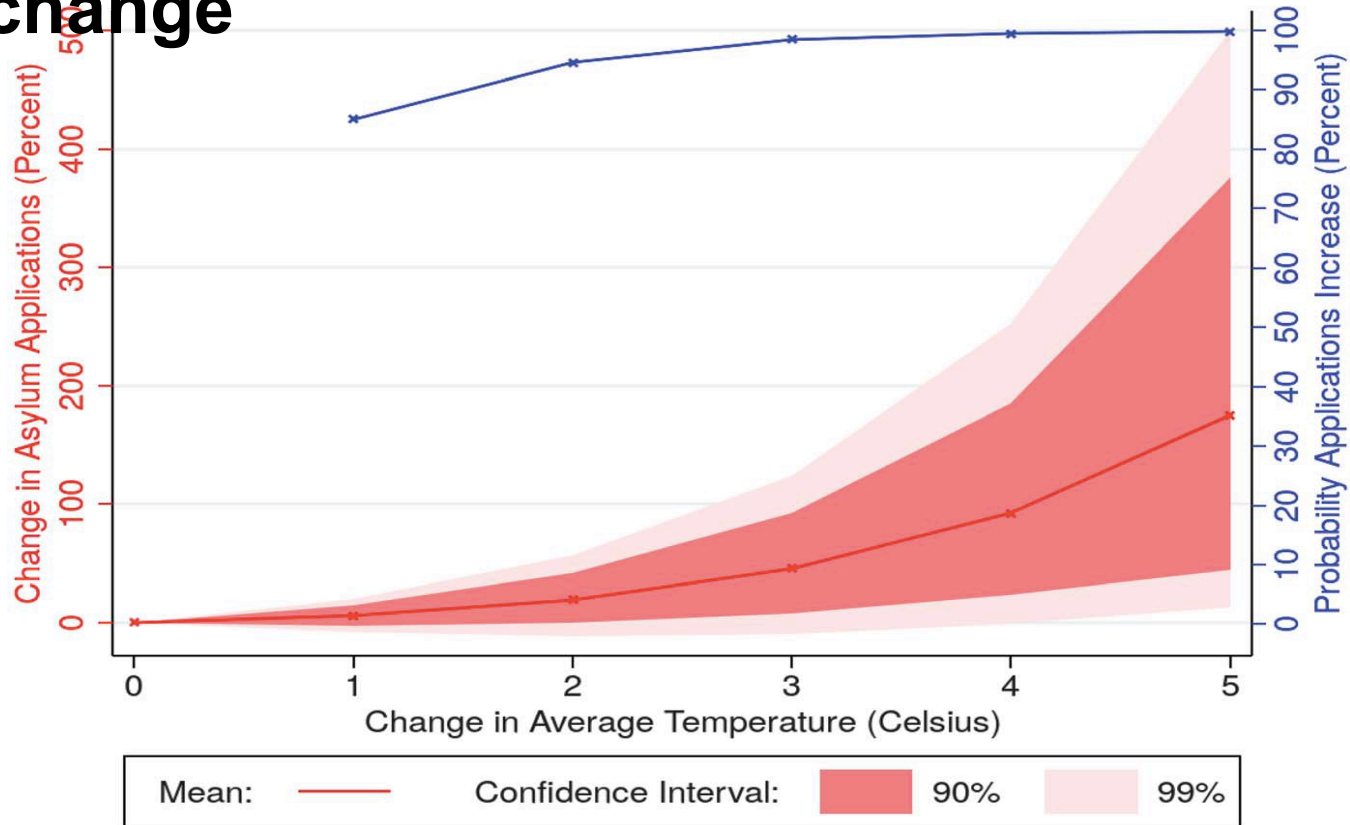
Land use change, biodiversity loss and disease risk

*Disease control strategies
require better understanding of
the relative importance for health
of land use change, biodiversity
loss, and other environmental
drivers and their interactions.*

Drivers of recently-emerging infectious diseases in humans from wildlife



EU asylum applications under climate change



Missirian and Schlenker, Science 2017.

Meeting the challenges

- Imagination (Conceptual),
- Knowledge,
- Implementation

Planetary Health

Safeguarding both human health
and the natural systems that
underpin it



Strengthening adaptation to protect health

The EU Strategy in a Nutshell

Priority 1: Promoting action by Member States

Action 1. Encourage MS to adopt Adaptation Strategies and action plans

Action 2. LIFE funding, including adaptation priority areas

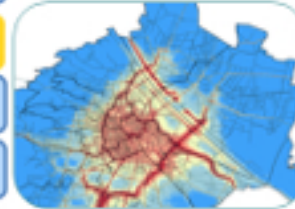
Action 3. Promoting adaptation action by cities along the Covenant of Mayors Initiative



Priority 2: Better informed decision-making

Action 4. Knowledge-gap strategy

Action 5. Climate-ADAPT



Priority 3: Key vulnerable sectors

Action 6. Climate proofing the Common Agricultural Policy, Cohesion Policy, and the Common Fisheries Policy

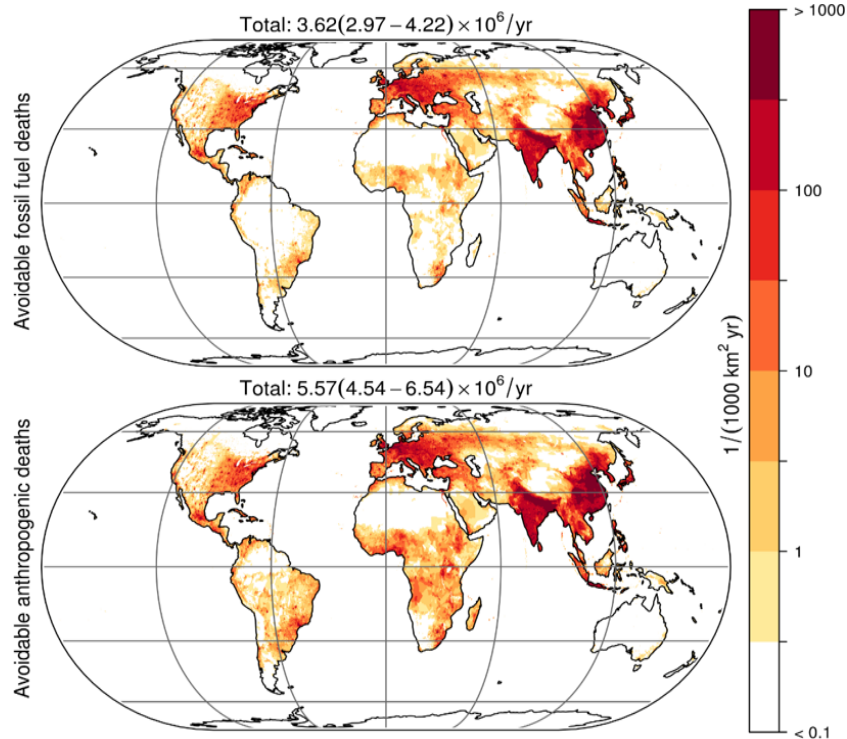
Action 7. Making infrastructure more resilient

Action 8. Promote products & services by insurance and finance markets



Health co-benefits of decarbonizing the world economy-millions of premature deaths averted annually from reduced air pollution

(Lelieveld, Klingmüller, Pozzer, Burnett, Haines, Ramanathan PNAS 2019)

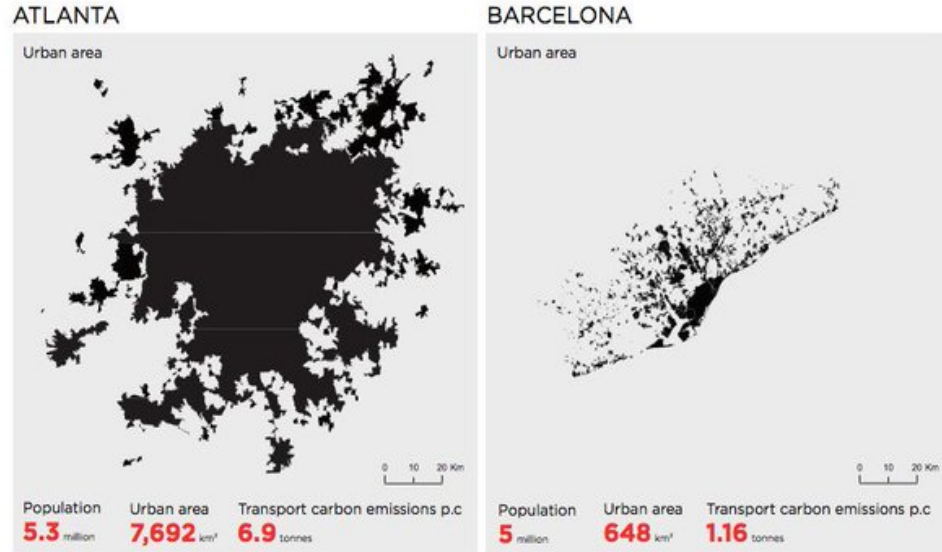


Phase-out of fossil fuels would avoid excess mortality of ~350,000 persons/year in EU-28

The Future of Planetary health will depend on cities

Cities are engines of economic growth and social change, with annual economic activity of about US\$62 trillion, 85% of global GDP in 2015 and 71–76% of global energy-related greenhouse gas (GHG) emissions.

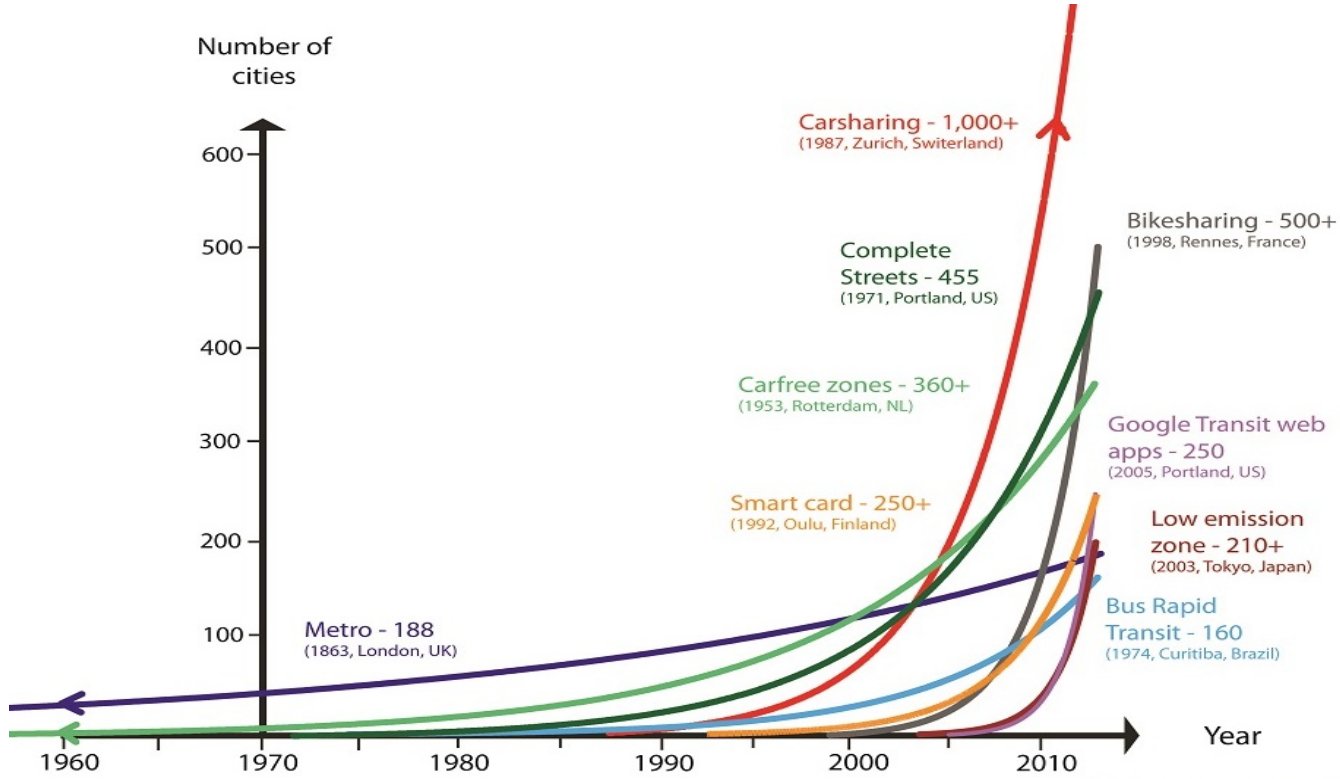
Newclimateconomy.report/workingpaper_cities_final_web.pdf
2015



Source: LSE Cities 2014

More compact development can reduce transport emissions by an order of magnitude.

Sustainable mobility trends scale up



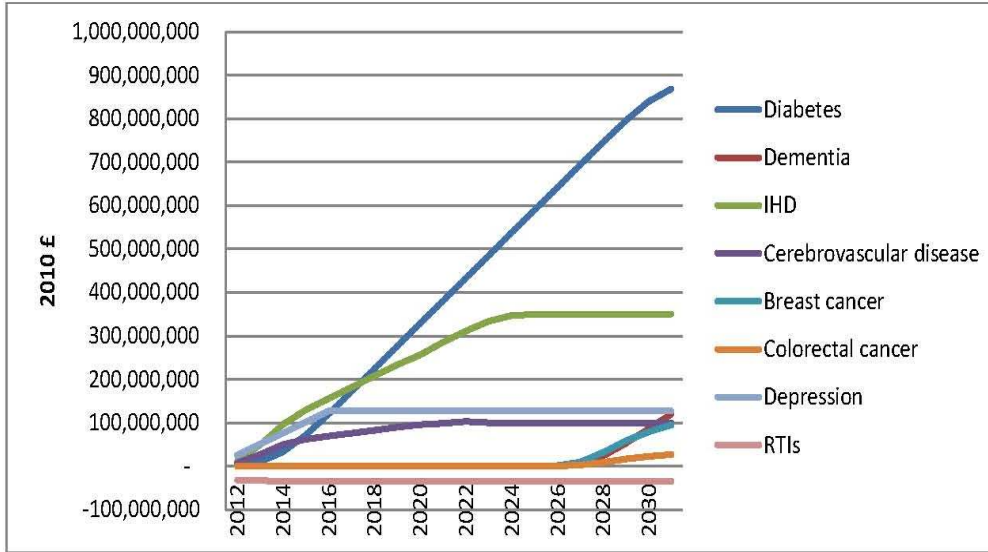
Sustainable Transport Adoption



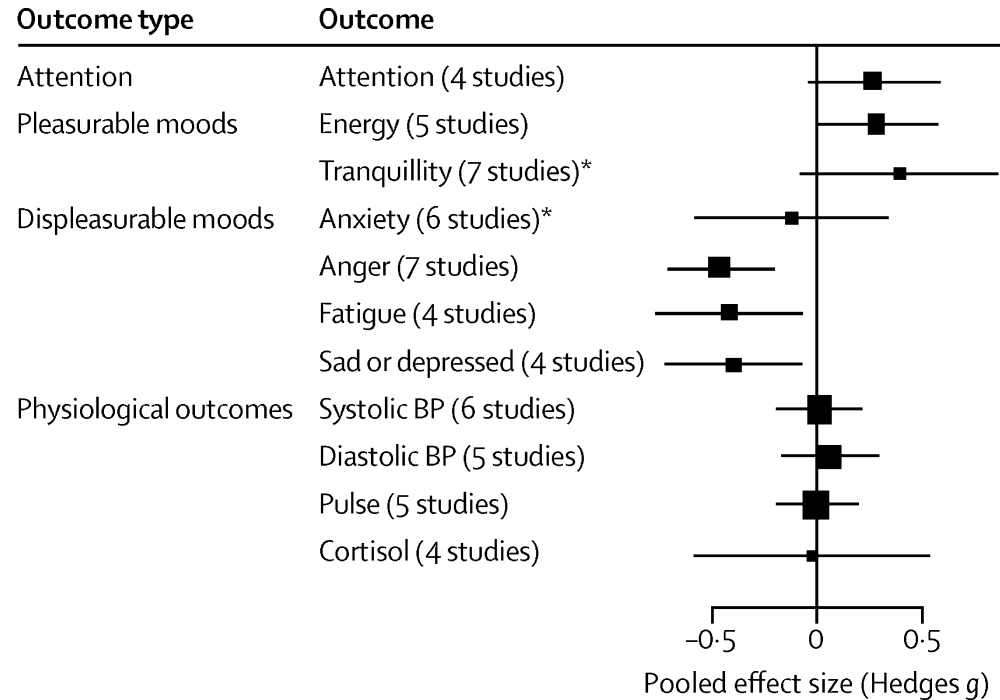
Increased active travel and low carbon transport – health and environmental benefits

(Woodcock et al 2009, Jarrett et al 2012))

Figure 1: Potential annual NHS expenditure averted by year and health outcome from Increased Active Travel scenario



Psychological and emotional outcomes from exposure to natural versus synthetic environments





Ecosystem Restoration

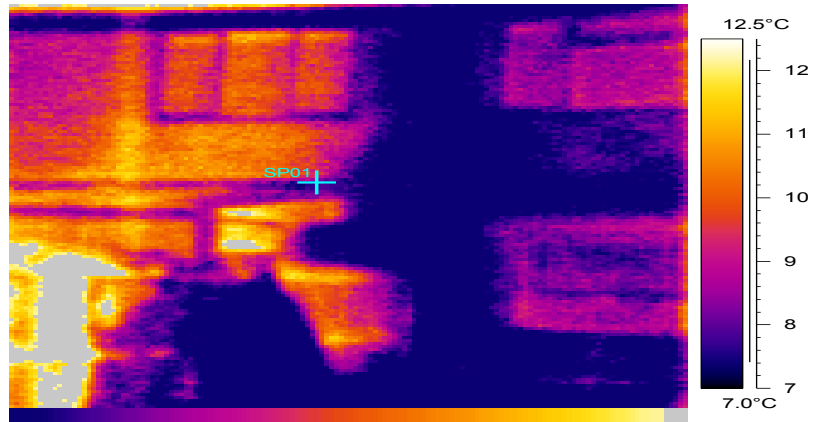
Restoring ecosystems can play an essential role in regulating freshwater quantity and quality, flood protection, air quality.

33 of 105 of the world's largest cities source their clean water from protected areas



Figure TS-8: Relative vulnerability of coastal deltas as indicated by the indicative population potentially displaced by current sea level trends to 2050 (Extreme \geq 1 million; high = 1 million – 50,000; medium 50,000 – 5,000 [B6.3]. Climate change would exacerbate these impacts.

Benefits of low carbon and energy efficient housing in the UK (combined insulation and ventilation control improvements) (Wilkinson et al 2009)



Impacts	Reduced exposures e.g. to fine particles, radon, cold, mould, tobacco smoke
Premature deaths averted	~ 5400/ year
Mt-CO ₂ saved (vs 1990)	55

Mayor of London, Environment Strategy

AIMS FOR 2050

Climate change and energy

London will be a zero carbon city – with a zero emission transport network and zero carbon buildings.

C neutral

Waste

London will be a zero waste city. 65% of London's municipal waste will be recycled.

Zero waste

Adapting to climate change

London and Londoners will be resilient to severe weather and longer-term climate change impacts, such as flooding, heat risk and drought.

Climate resilient

Green infrastructure

More than half of London's area will be green, and tree canopy cover will increase by ten per cent, by 2050.

50% green

Air quality

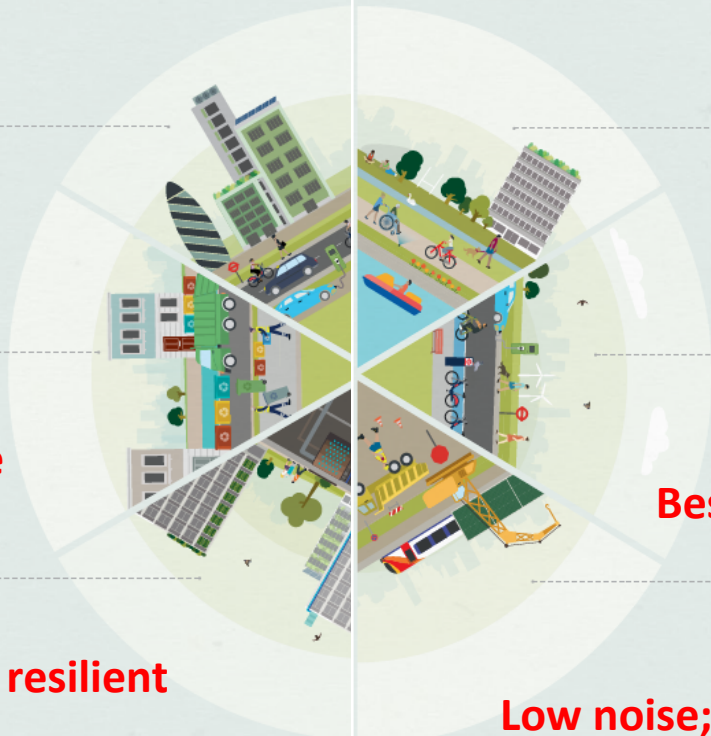
London will have the best air quality of any major world city by 2050, going beyond the legal requirements to protect human health and minimise inequalities.

Best air quality

Noise

The number of people adversely affected by noise will be reduced, and more quiet and tranquil spaces will be promoted.

Low noise; tranquil spaces



THE LANCET

January, 2019

www.thelancet.com

Food in the Anthropocene: the EAT–Lancet Commission on healthy diets from sustainable food systems



“Food in the Anthropocene represents one of the greatest health and environmental challenges of the 21st century.”

A Commission by The Lancet

AND HERE'S WHAT WE SHOULD BE EATING EVERY DAY

FRUIT AND VEGETABLES

Fruits **200g**

Vegetables **300g**

Including **100g** of dark green vegetables (cabbage, broccoli etc) AND

100g red and orange vegetables (peppers, carrots)

SOURCE: Lancet

CARBOHYDRATE

Whole grains **232g**

Two slices of wholemeal toast
Rice **60g** Pasta **80g**

Starchy vegetables (potatoes) **50g**

DAIRY

(half a pint of milk) **250g**

SUGAR

Added sugar and artificial sweeteners **31g**

FAT
Olive oil, sunflower oil **52g**

Plant-sourced PROTEIN

Lentils or peas **50g** Nuts **50g**

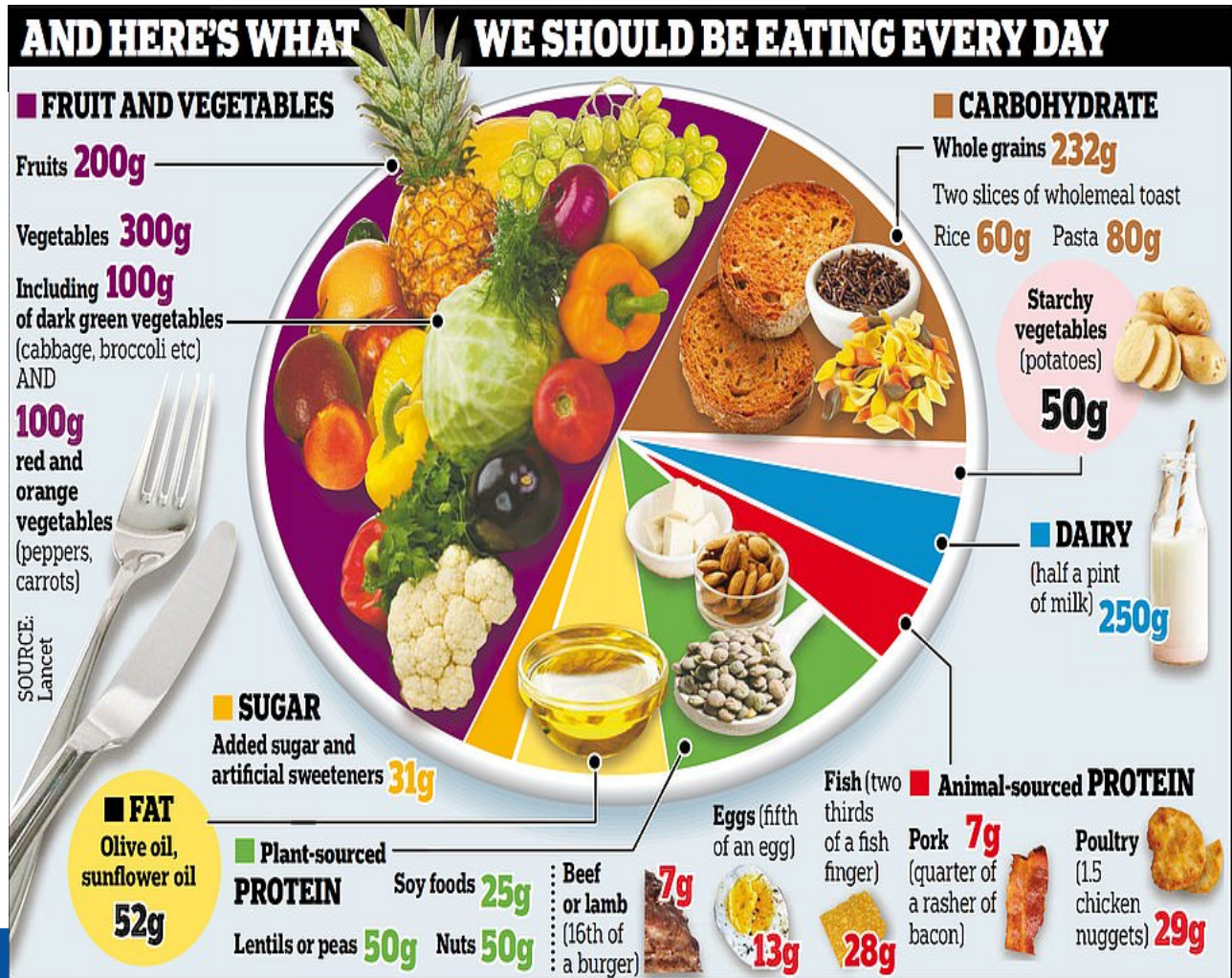
Soy foods **25g**
Beef or lamb (16th of a burger) **7g**

Eggs (fifth of an egg) **13g**

Fish (two thirds of a fish finger) **28g**

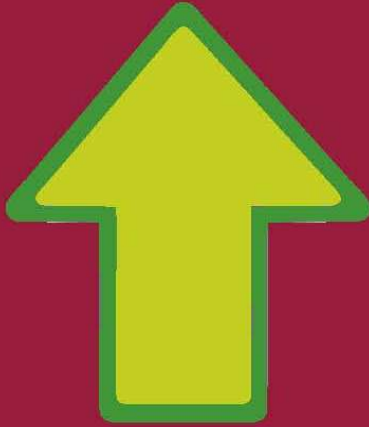
Animal-sourced PROTEIN
Pork **7g** (quarter of a rasher of bacon)

Poultry (1.5 chicken nuggets) **29g**



Public opinion survey

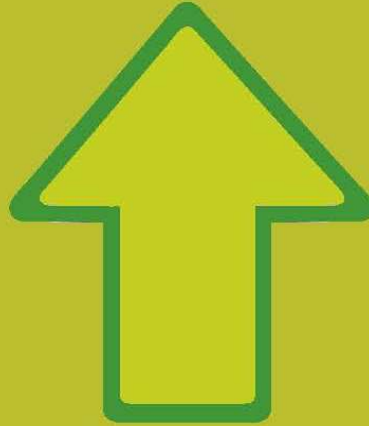
92%



89%

92% of the public think it is important for the health system to work in a more sustainable way – (was 92% 2011, 89% 2013)

43%



36%

43% of the public said that the health system should act in a more sustainable way even if there is a cost involved – (was 33% 2011, 36% 2013)

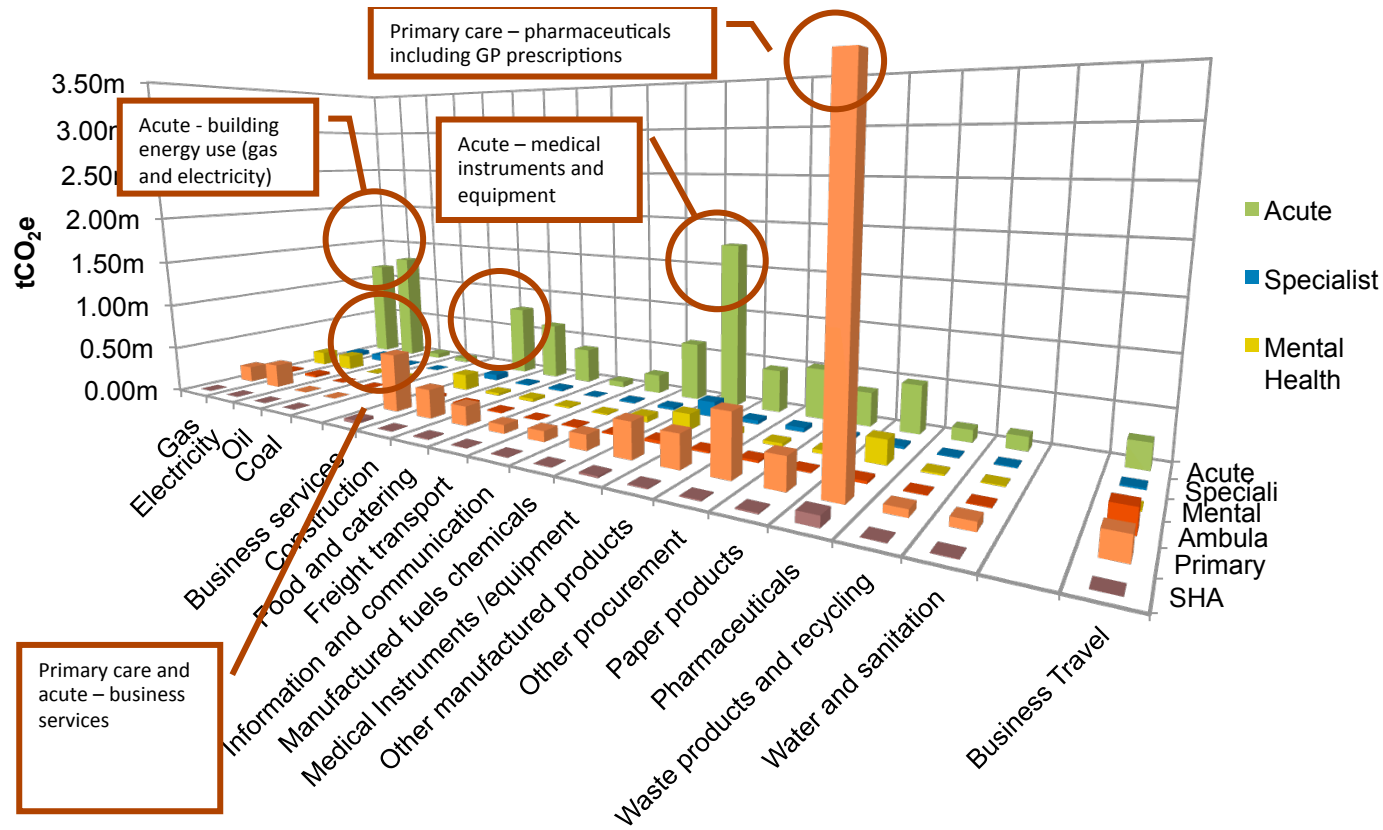
25%



19%

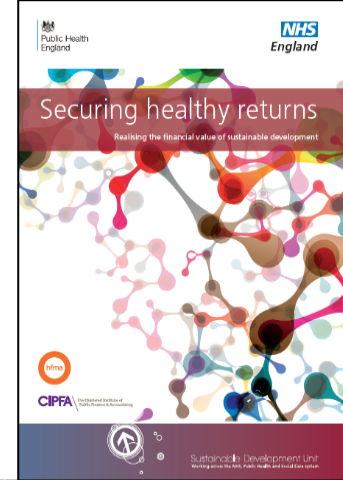
25% of the public felt that sustainability should be a top priority – (was 19% 2011, 19% 2013)

NHS Goods and Services carbon footprint – carbon hotspots



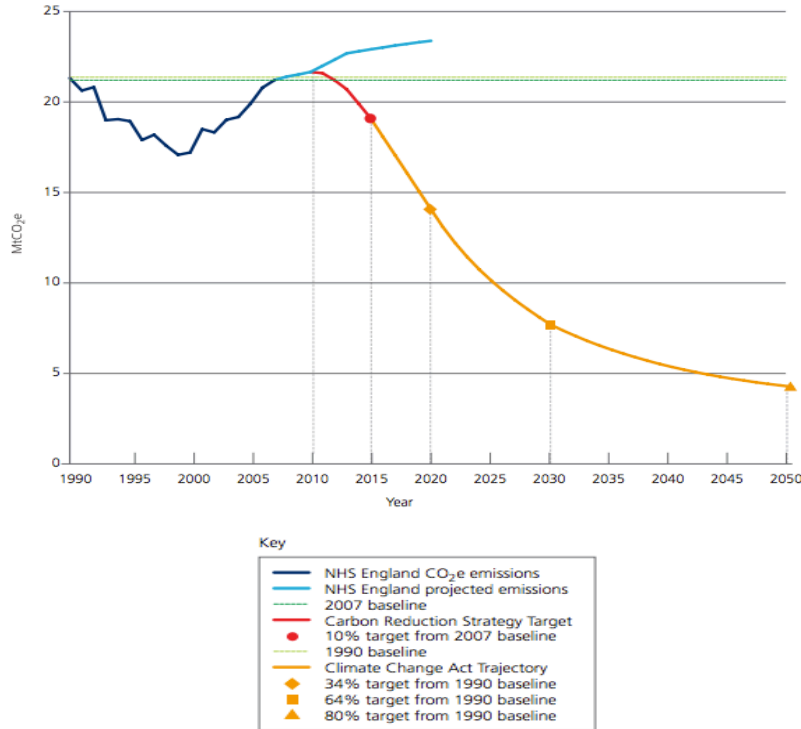
Towards an environmentally and socially sustainable health system

- Reduce energy use, GHG emissions and environmental footprint.
- Provide care closer to home
- £370m savings pa by 2020



How do we reduce Health Service emissions ?

NHS England emissions reduced by 11% from 2007 to 2015, despite an 18% increase in activity.



Eg.

- Grid decarbonisation
- Vehicle efficiency
- Supports 30% reduction

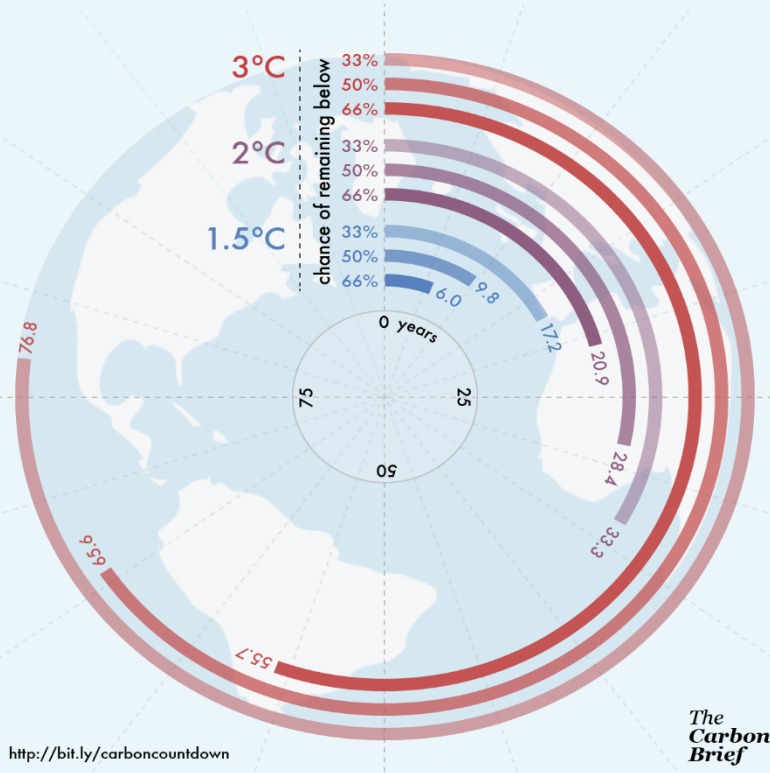
Eg.

- Energy and travel efficiency
- Anaesthetic gases
- Models of care
- Public health
- Supports 58% reduction

The need for urgent action to safeguard health

Carbon Countdown

How many years of current emissions would use up the IPCC's carbon budgets for different levels of warming?



‘Solutions lie within reach and should be based on the redefinition of prosperity to focus on the enhancement of quality of life and delivery of improved health for all, together with respect for the integrity of natural systems’