

UK CLIMATE ADAPTATION

Ian Hawker

UK temperatures are rising

1.2C/2023, 1.5C/2030, 2C/2050, 3C/2100

More heat waves, droughts & floods affecting water & food supply

The CCC has identified 61 major risks in UK (water, food, services...)

UK Government mandated to produce National Adaptation Plan (NAP)

NAP1 2013, NAP2 2018, NAP3 2023...

NAP3 Published 17 July 2023

The plan highlights growing risk to water supply, public health & food security

CCC estimate cost £20billion per annum

However NAP3 contained little new funding or policies to tackle climate adaptation

New public building standards/£15M research funding/Piloting new climate risk information service

“An ineffective responses to the climate adaptation challenges with inadequate actions, insufficient scope & lacking ambition” – CCC Evaluation

June 2021

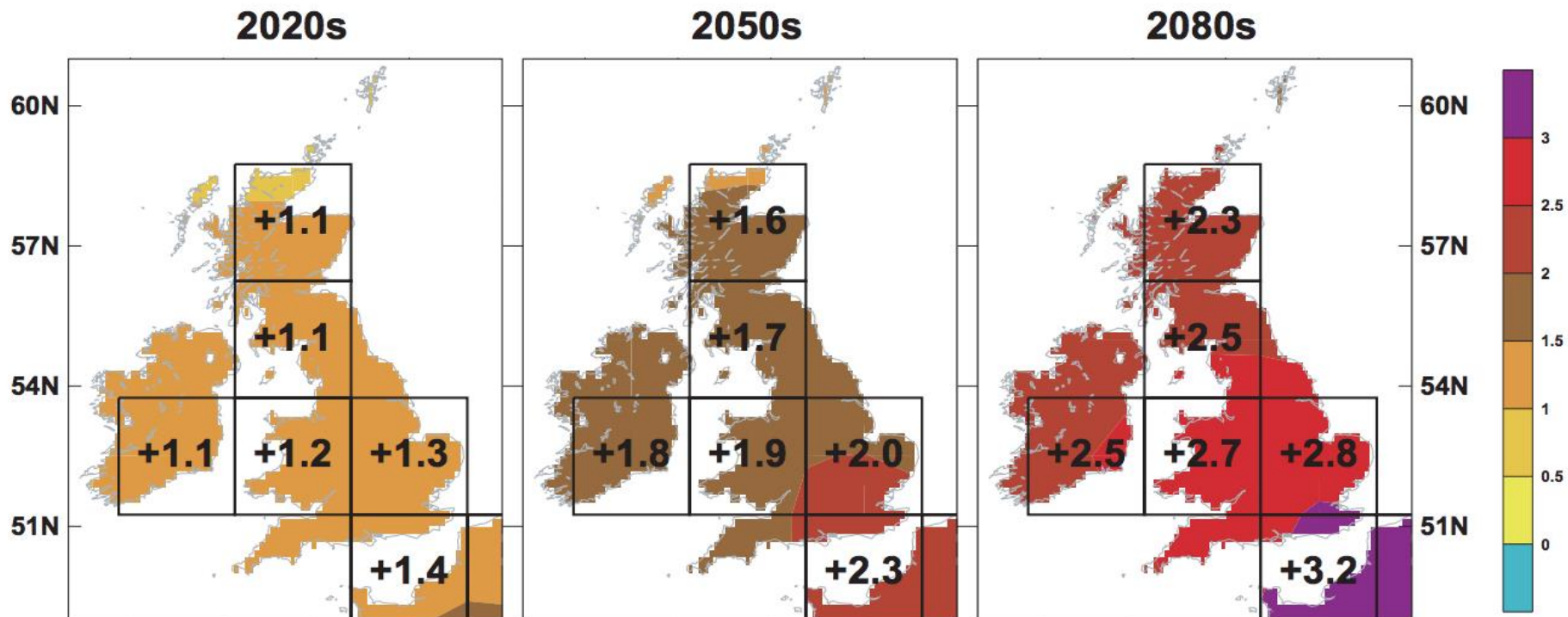
Independent Assessment of
UK Climate Risk

Advice to Government
For the UK's third Climate Change Risk Assessment (CCRA3)



PREDICTED UK TEMPERATURE RISE – Met Office

Temperature rise from pre-industrial levels



Temperature rises will impact:
Water supply
Agriculture (dry hot summers)
Health risk (over heating & disease)

NATIONAL ADAPTATION PLANNING (NAP)

Nature

Encourage natural ecosystems

Food Security

Ensure resilient supply chains

Energy

More wind, solar & storage

Transport

Low carbon all modes

Buildings

Low carbon construction & operation

Business

Incentives to adapt to climate change

Agriculture

Regenerative farming

Water Supply

Reduce demand & increase supply

Telecommunications

Robust telephone, mobile & internet services

Towns & Cities

Heatwaves, flooding & sea level rise

Health

Heat & disease control

Finance

Resilience to climate shocks (food...)

The National Adaptation Plan NAP3 includes these but not at scale

FUTURE 3C WORLD 2100+

Parts of the Earth become uninhabitable due to heat & water scarcity
Increase from 0.8% to 18%

Desertification, extreme weather



What about world food production?

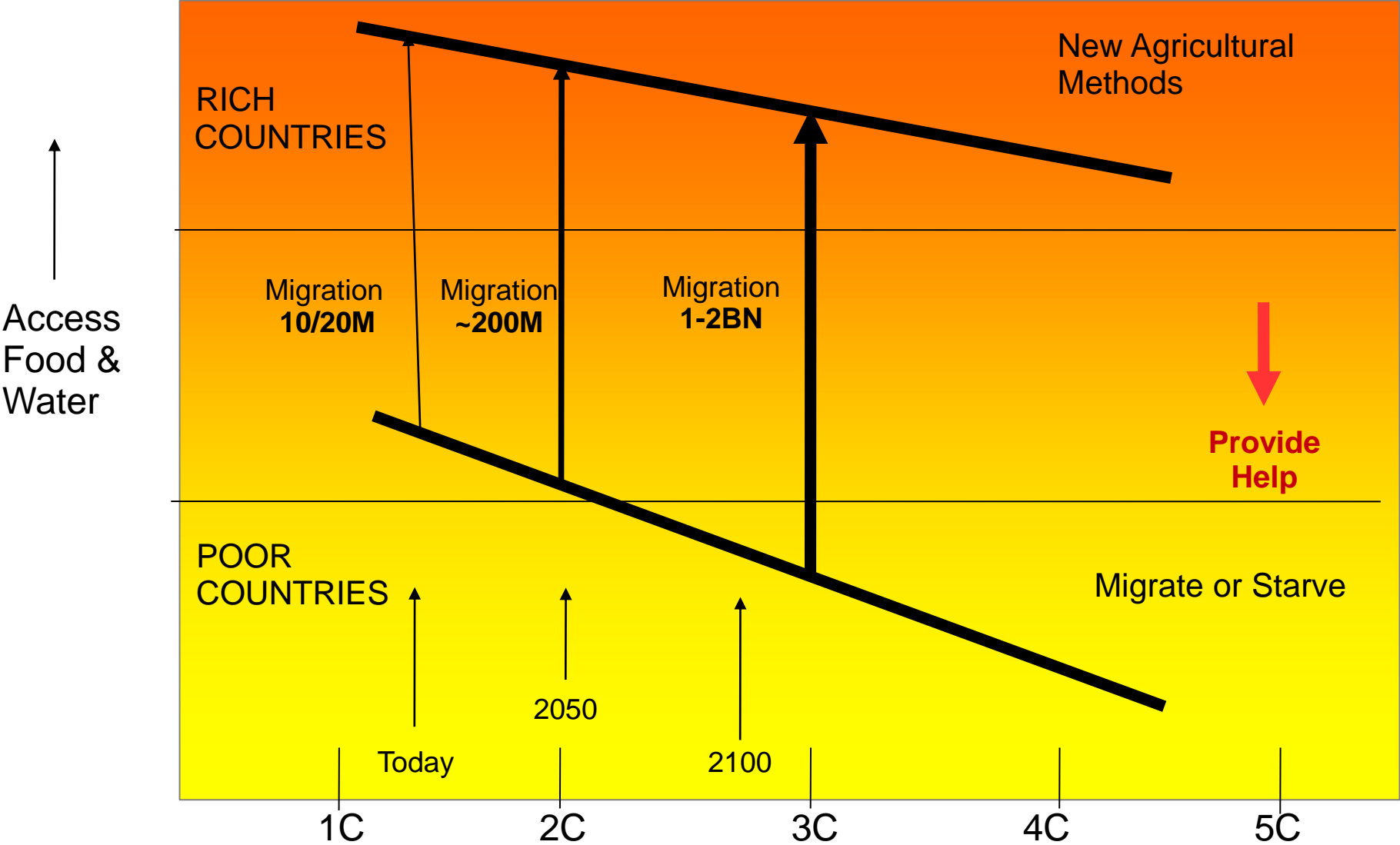
What about water supply?

Mass migration from equatorial regions

Sea level rise affecting coastal towns & cities

MASS MIGRATION FROM EQUATORIAL COUNTRIES

International Environmental Partnership (IEP)



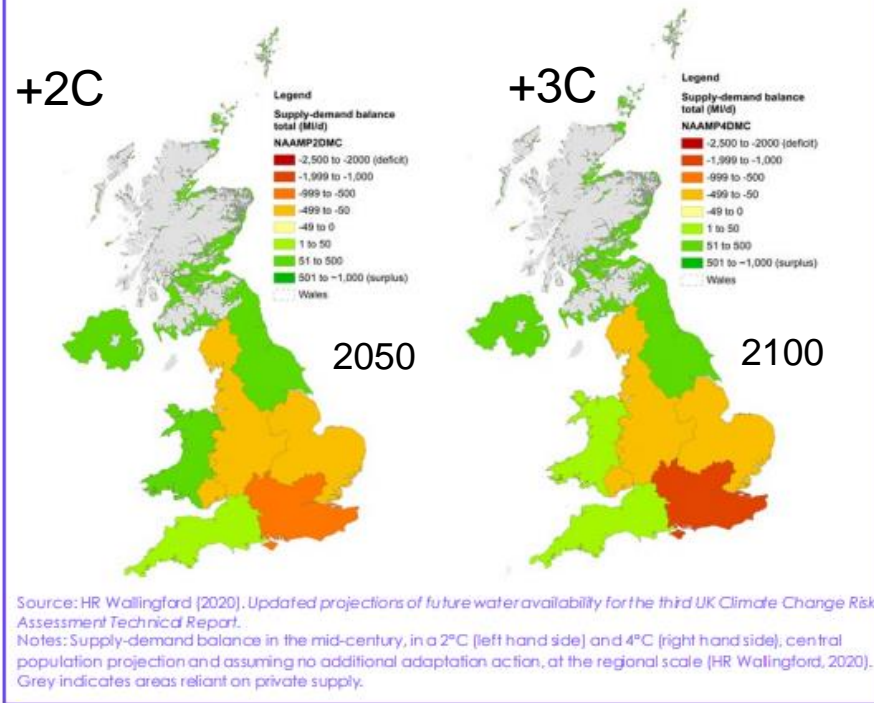
UK KEY RISKS & IMPACT CCC Risk Report 2021

<u>Top Risks</u>	2020	2050	2100	<u>Impact</u>
Risks to diversity of land & freshwater habitats				Continued decline in animal & plant biodiversity
Risks to soil health from flooding & drought				By 2050 pressure on agriculture especially in SE England
Risks to natural carbon stores bogs & forests				Essential to achieve Net Zero
Risk to crops & live stock due to drought				Reduced food supply & Increased prices
Risks to industry supply chains				Increased cost of goods & services
Risk to power supply due to more extreme weather				Power outages
Risks to human health due to overheating				x3 heat related deaths by 2050 2,000 to 7,000 each year
Risk to imports				Supply of overseas goods become less reliable

Government accepted 36 of the 61 risks to include in National Adaptation Plan (NAP3)

WATER SUPPLY - CCC

Figure 3.9 Mid-century supply-demand balance for UK Water Resource Regions



Projections indicate water shortages in the South East region by 2050

National Plan to increase water supply essential

INDIVIDUALS CAN SAVE WATER

The average household, using 350 gallons per day
Could save estimated 125 gallons of water per day

The average individual, currently using 70 gallons per day
Could save 25 gallons of water per day

Imagine you are paying for each drop of water

Install a water meter Increased awareness of water usage

Switch to showers 1 Minute shower

Fit low flow aerators on taps and showers

Install high-efficiency toilets ~ 20% saving

Outside water capture & storage Vegetables, plants



UK HEAT DEATHS

UK Heat related deaths expected to rise from 2000/yr in 2020 to 7000/yr in 2050 *Journal of Public Health Report June 21*

Local authorities have a crucial role in preparing for the predicted health impact of climate change (heat, infestation...)

Where they exist strategies & plans vary in scope across Health Authorities

Public health consultants do not have an explicit remit to plan for climate change adaptation

Current actions are aligned to existing public health emergency planning functions
not climate change

Key barriers to health-related adaptation are:

Limited public and professional awareness of the health impacts of climate change

Financial

Lack of leadership



CLIMATE RESISTANT AGRICULTURE

Currently we plough allowing water & nutrients to escape into the atmosphere

Regenerative agriculture is a different approach more resilient to climate change

Maintain ground cover all year to protect the soil & absorb carbon dioxide through photosynthesis

Minimize soil disturbance to keep water & carbon in the ground

Reduce use of fertilizers (which generate green house gases)

Reduce use of pesticides to increase biodiversity

Food may be more expensive due to investment needed

But agriculture will be more resistant to climate change

Government legislation?



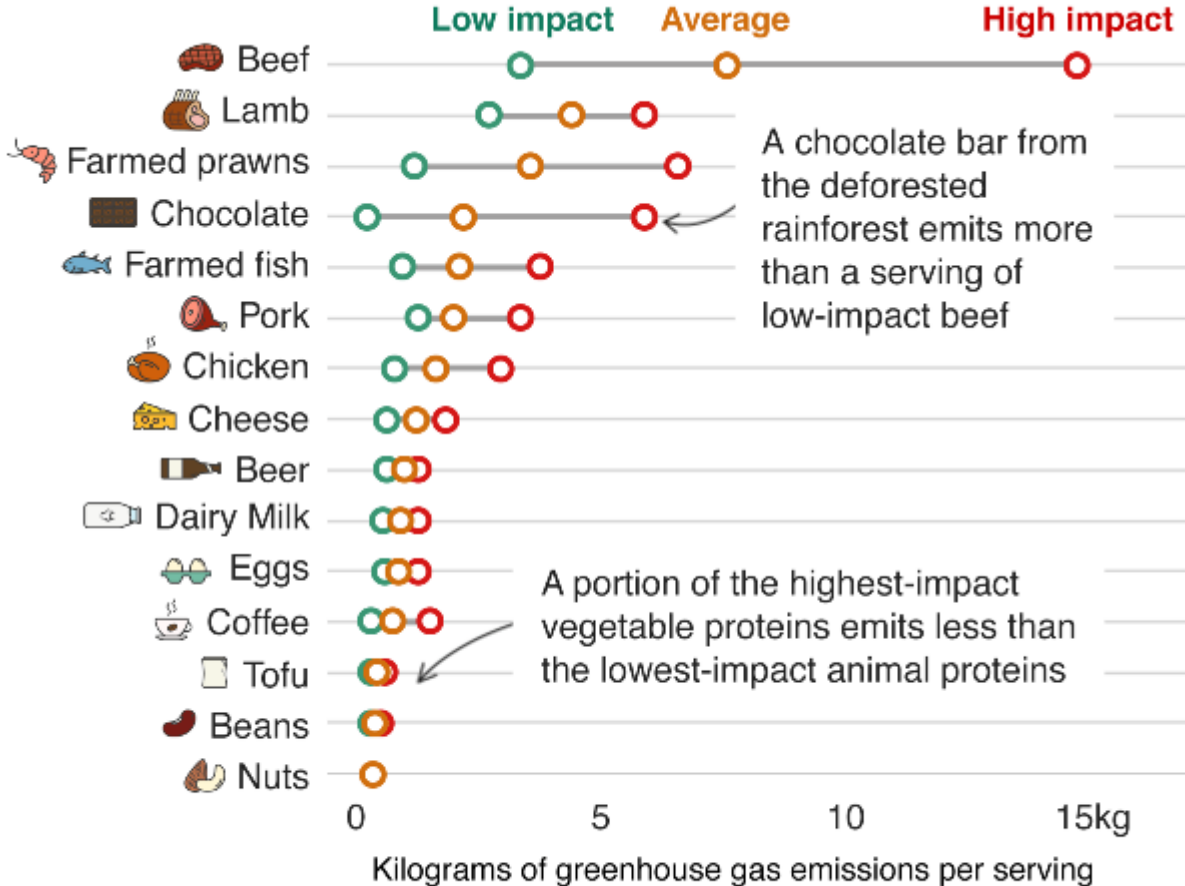
REGENERATIVE FARMING

Wakelyns Agro Farm Suffolk



ADAPTATION: EAT LOW CARBON FOODS

↓
LOW CARBON
FOOD



Source: Poore & Nemecek (2018), Science

ADAPTATION: UK ENERGY SUPPLY

CCC predicts x2 UK energy demand by 2050

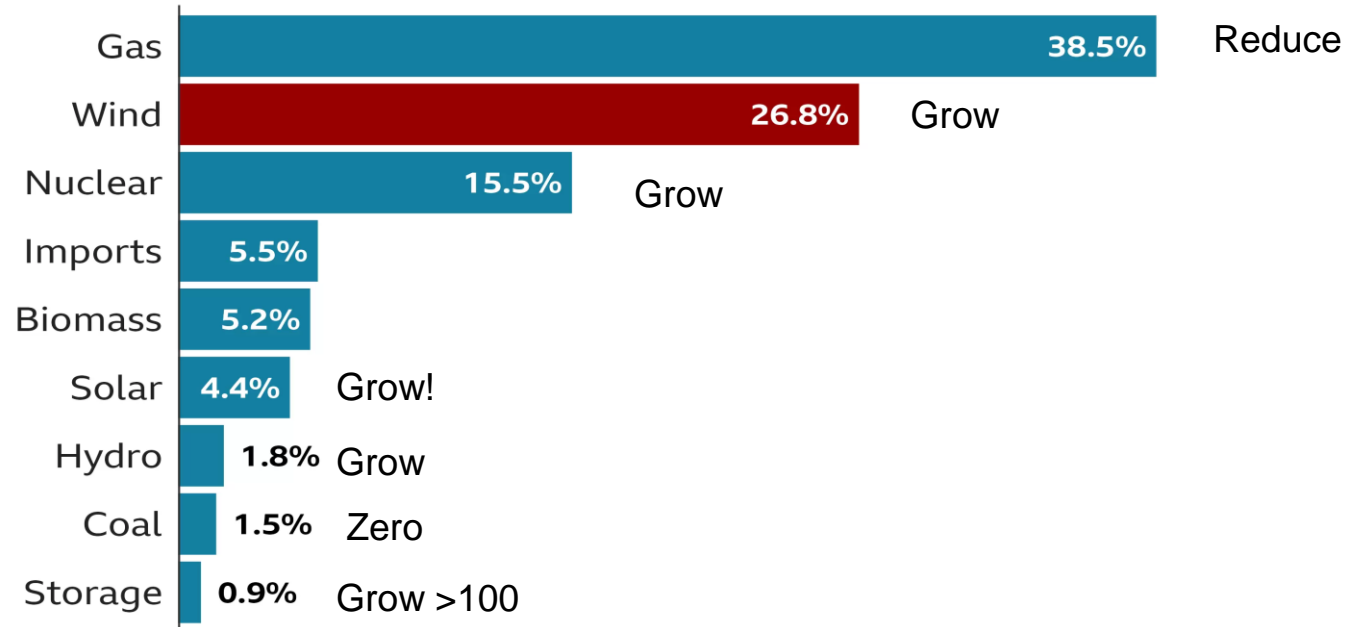
Driven by electrification of vehicles, houses, industry, power...

Fully decarbonise by 2035?

Grow rooftop solar using subsidies?

Wind was the second largest source of electricity in 2022

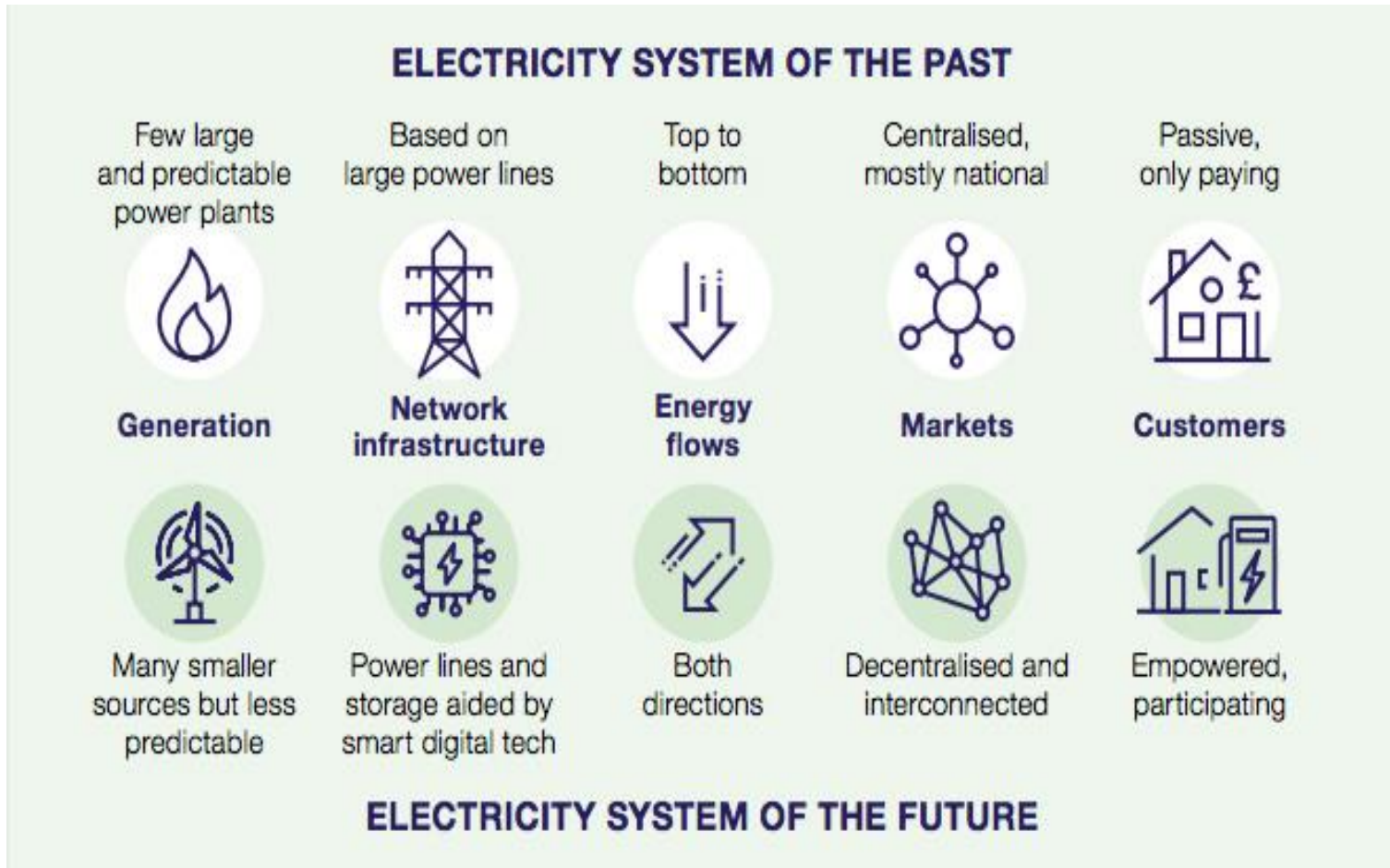
Total generation by source, Great Britain



Source: National Grid Electricity System Operator

ADAPTATION: NATIONAL GRID

Currently delays of 1-15 years for connection to an ageing national grid



Intelligent high capacity national grid supporting multiple energy sources

Jul 22 National Grid announced plans for a £54bn upgrade?

ADAPTATION: UK WILDFIRES

GLOBALLY:

Wildfires have decreased by 25% as forests replaced by agriculture (Congo, Brazil...)

Expected to increase by 8% by 2030 as forests spread into Arctic areas (Canada, Russia...)

Increase by 50% by 2050

UK:

2022 heatwaves produced > wildfires than in recorded history .

2023 has already seen hundreds of grass fires

Currently only 5 specialist fire units in the UK

Fire crews are being trained in skills from southern Europe and the US

Rapid response wildfire teams to be formed



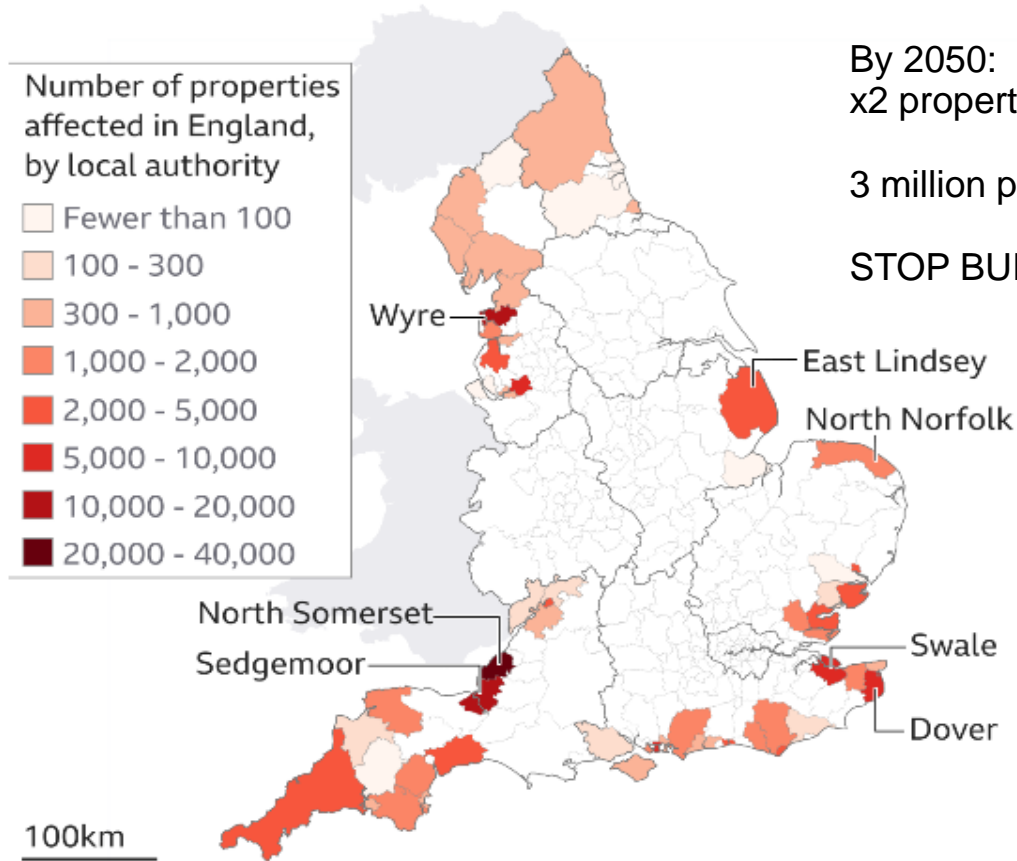
Properties at risk from flooding from sea level rises (by 2050)

Sea level rise 0.5 – 2.0 m by 2100

By 2050:
x2 properties on the floodplain

3 million properties at risk of flooding

STOP BUILDING ON FLOOD PLAINS!



Source: Sayers et al/UEA

BBC

2025 Future Homes Standard

In 2025 compliance with the Future Homes Standard (FHS) will become mandatory.

New homes built from 2025 will have 75-80% less carbon emissions

Focused on improving home insulation

Heat pumps & solar

New minimum efficiency standards
Heat loss through windows, walls, roofs

Ventilation & control of indoor air pollutants

Electric vehicle charging points

FHS homes will be expected to be net zero upgradable (at owners expense)



KEEPING OUR CITIES COOL

Towns & cities are hotter due to the concentration of buildings and tarmac which absorb heat during the day

Trees produce shade & cool the air through transpiration

Shade structures – traditional architecture in hot countries often use arcades, colonnades, pergolas and awnings

Painting roofs white – increasing the reflectivity of buildings can reduce heat

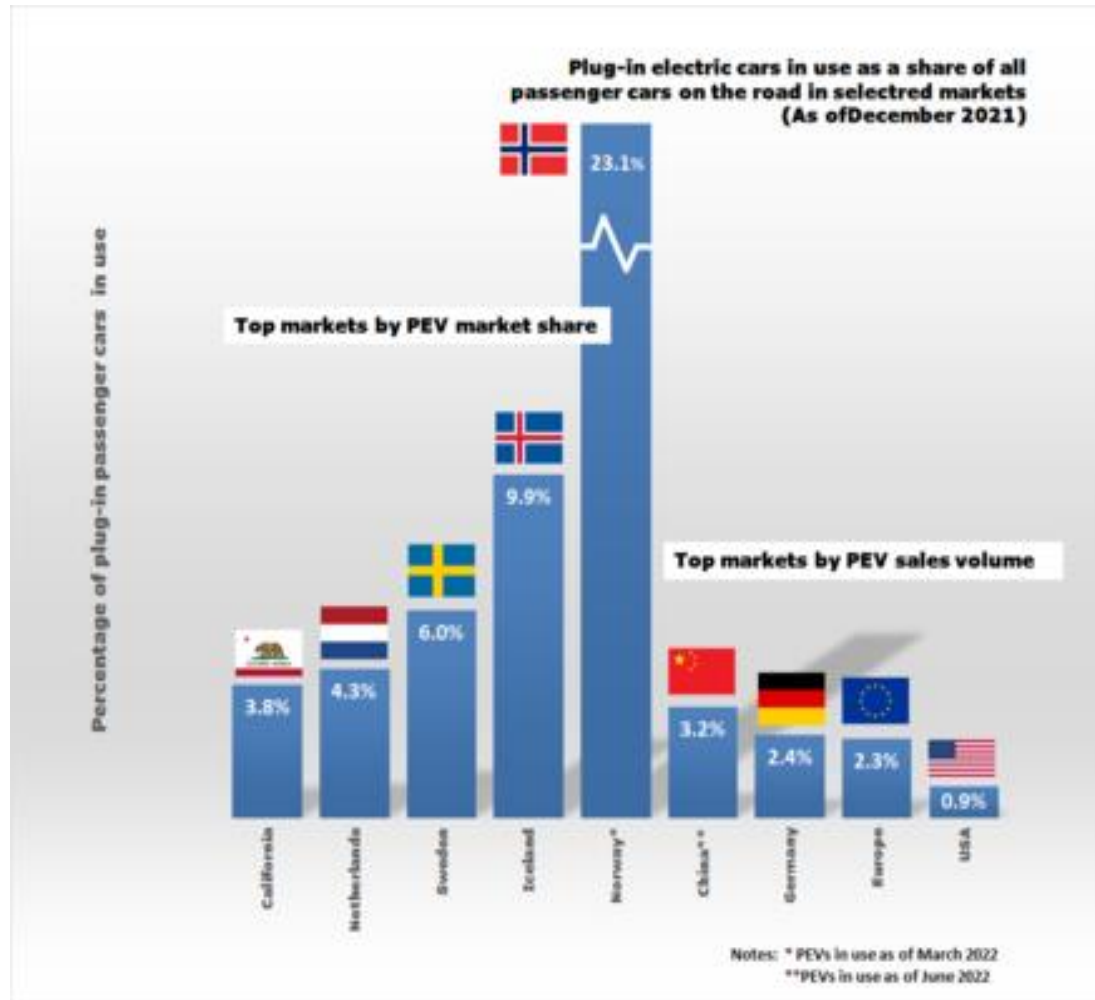
Water features – can help to cool a city. Moving water creates spray and has a cooling effect

Design out heat – a variety of building heights encourages better air flow. Shade can be planned in from the start

Air conditioning run direct from solar



TRANSPORT - ELECTRIC VEHICLES



Zero emissions

65% reduction in Whole Life Carbon

What about Government Subsidies?

Status:

660K electric cars on UK roads in 2022 (~2%)

Insufficient public charging points (x10 needed)

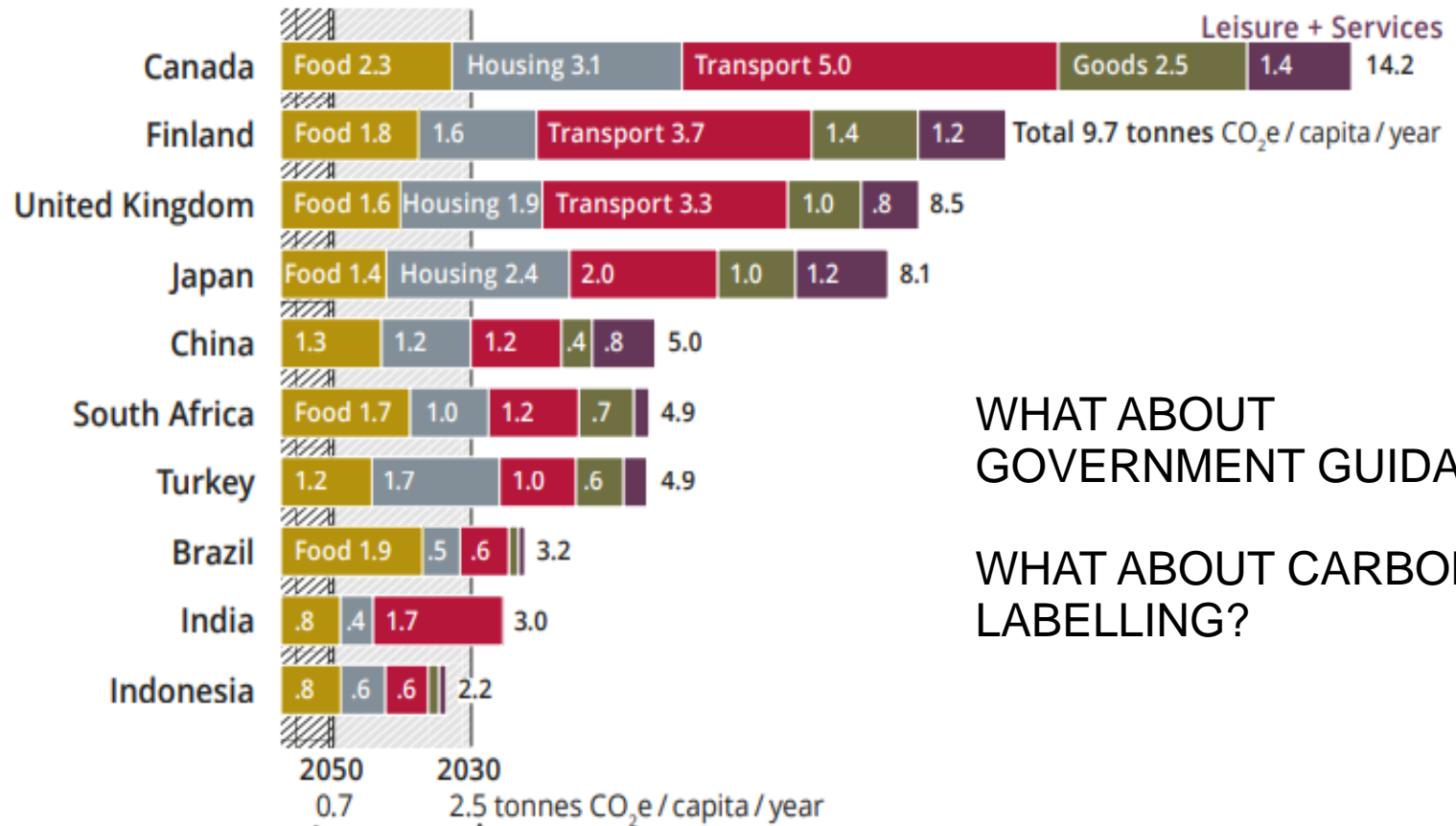
Local driving/home charging

Long distance driving



ADAPTATION: REDUCE CARBON FOOTPRINT

In UK need to reduce from 8.5 tonnes to 0.7 tonnes per person per year by 2050

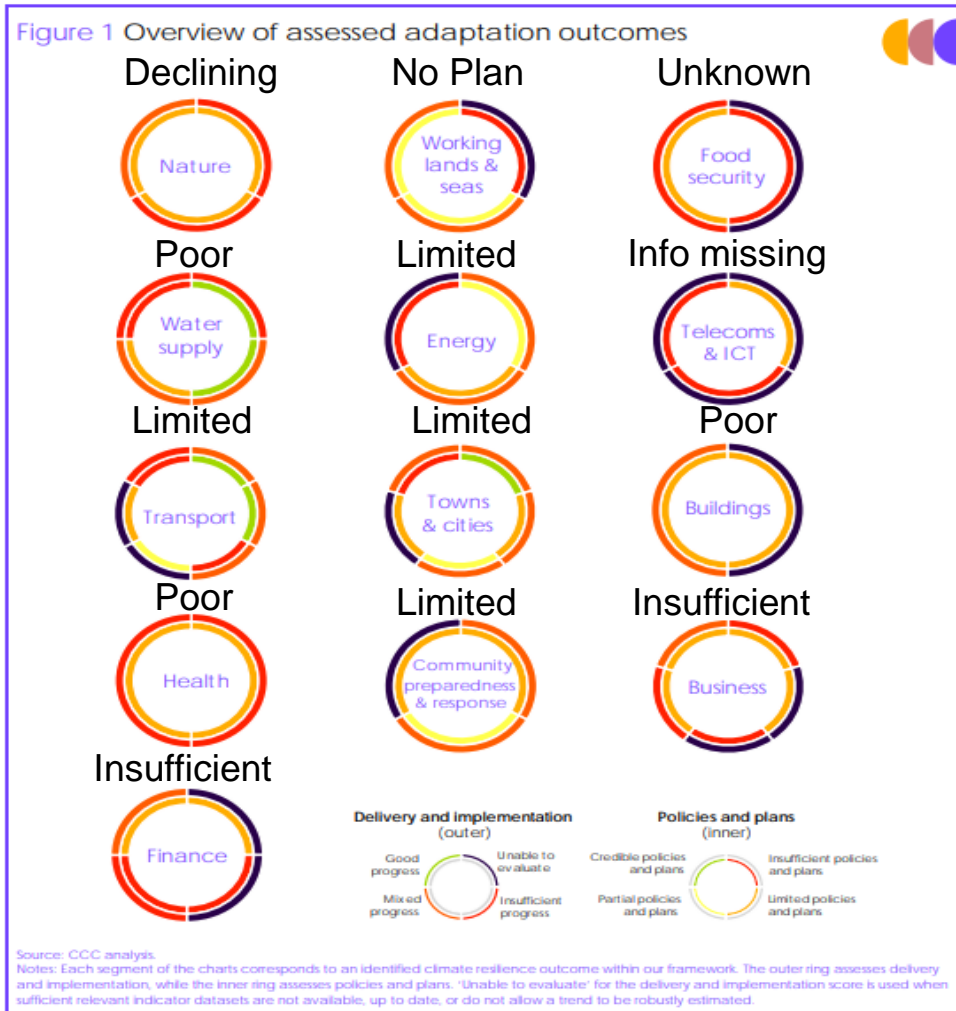


WHAT ABOUT GOVERNMENT GUIDANCE?

WHAT ABOUT CARBON LABELLING?

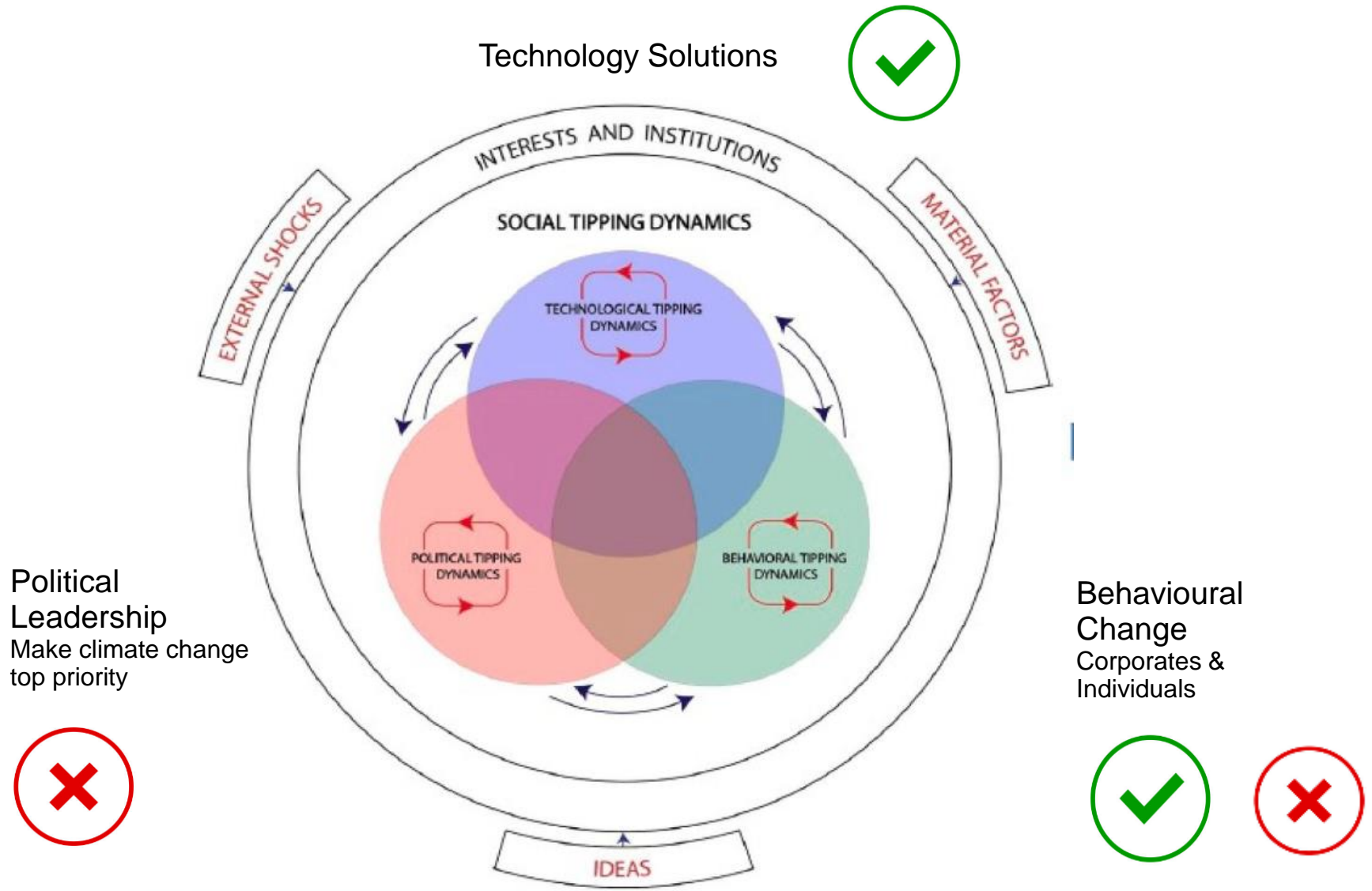
CCC NAP3 REPORT TO PARLIAMENT July 2023

Climate Adaptation is poor



CLIMATE ADAPTATION

A combination of technology, political, and behavioural change



BREAKOUT ROOM QUESTIONS

What actions should the UK government take now to prepare the country for the climate change?

What actions should we take as individuals now and in the future?