

Module 2: Introduction to Climate Change Policy and Context

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Aims, objectives and structure of the module

Other modules

1

LDF/plan making

2

Introduction to climate change

3

Climate change planning for renewable energy

4

Climate change planning for construction

5

Climate change planning for green infrastructure

6

Mitigation and adaptation in masterplanning

7

Mitigation and adaptation in small scale development

8

Climate change and viability

9

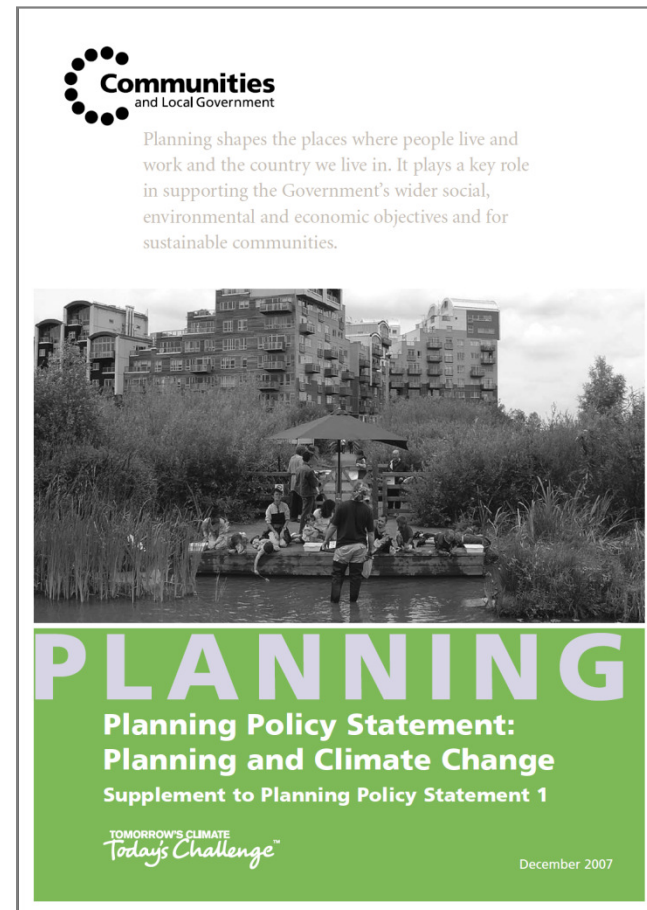
Historic assets and climate change

10

Regulation regimes, likely policy changes

Aims

- Provide an understanding of UK and EU legislative and policy context for planning and climate change
- The role of the LDF/local plan within this context
- The role of planners within the policy framework as applied to Yorkshire and Humber Region.



Structure

1. Aims and structure of module
2. Human impact on climate change and resilience
3. The legislative framework and the statutory imperative for planners
4. Climate change adaptation and mitigation
5. The energy hierarchy
6. Key methods of achieving carbon savings through planning
7. The low carbon economy

ARUP

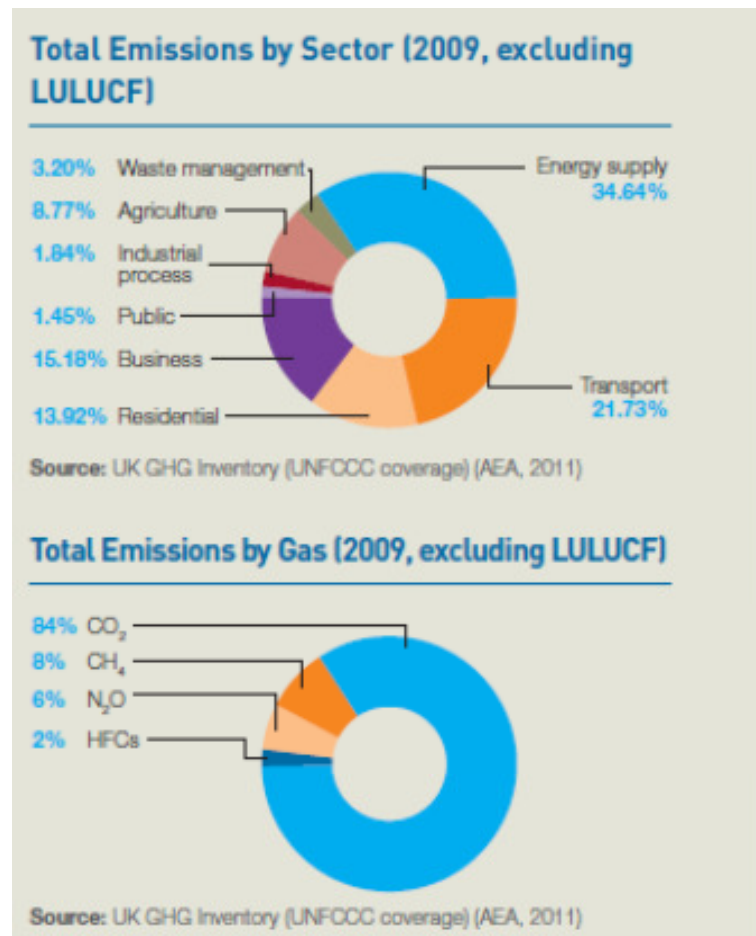
FORTISMERE
ASSOCIATES

Green House Gases - GHG

Greenhouse Gases: Which can planners influence – overall quantity or rates of emission?

- Methane –CH₄
- Carbon Dioxide – CO₂
- Nitrous Oxide – N₂O
- Hydroflourocarbons (HFCs)
- Perfluorocarbons (PFCs)
- Sulphur Hexafluoride (SF₆)

- Landfill
- Industrial process
- Heat and light for buildings
- Vehicle emissions



Humans role in Climate Change

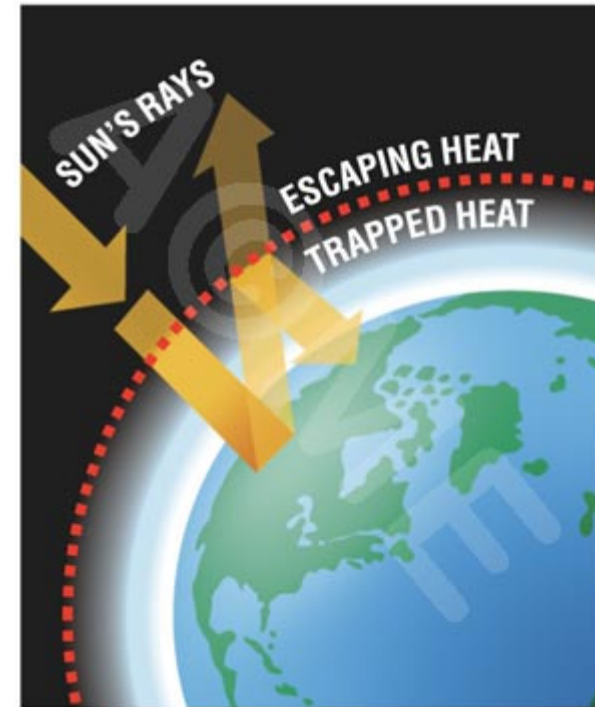
What is climate? And climate change?

1. **Climate** is the average weather (temperature, precipitation, wind) – typically over 30 year period
2. Around 14 degrees centigrade average global temperature.
3. **Climate change** – change in this weather or the variability of the weather



What affects the climate?

- The sun
- Interactions between the atmosphere and oceans, ice sheets, land masses and vegetation
- Greenhouse effect – certain gases allow heat from sun through but not to radiate back out to space.



Carbon Cycle

- **Carbon dioxide sources**

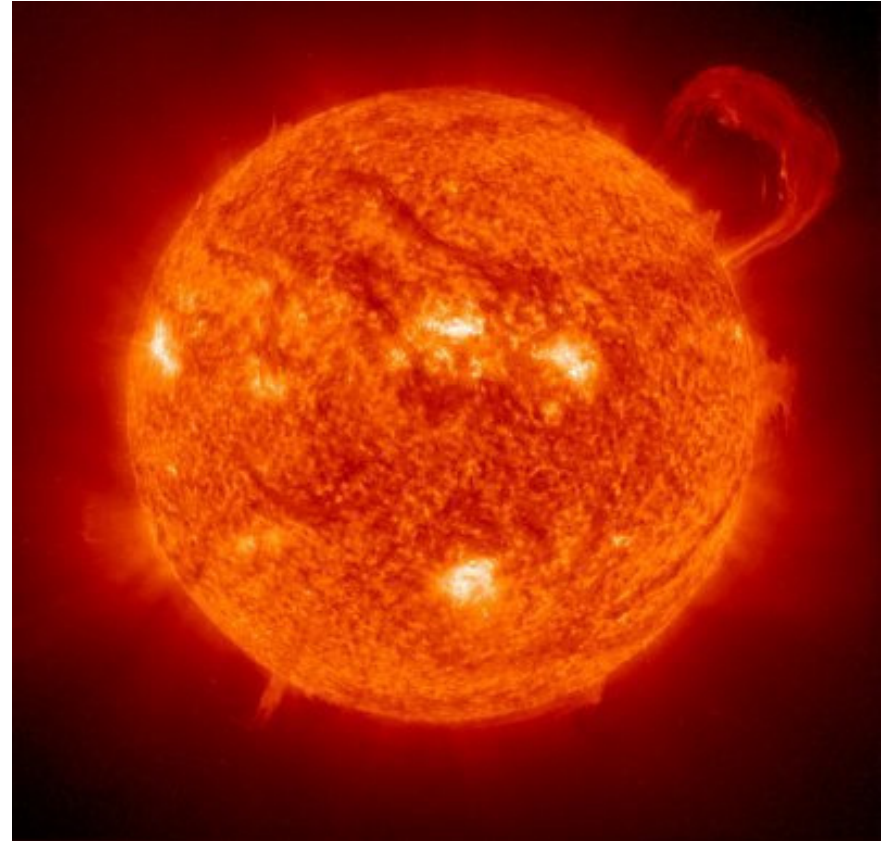
- Land
- Vegetation
- Animals
- Volcanoes
- Humans activity

- **Carbon sinks**

- Trees & plants
- Rocks
- Oceans
- Humans activity?

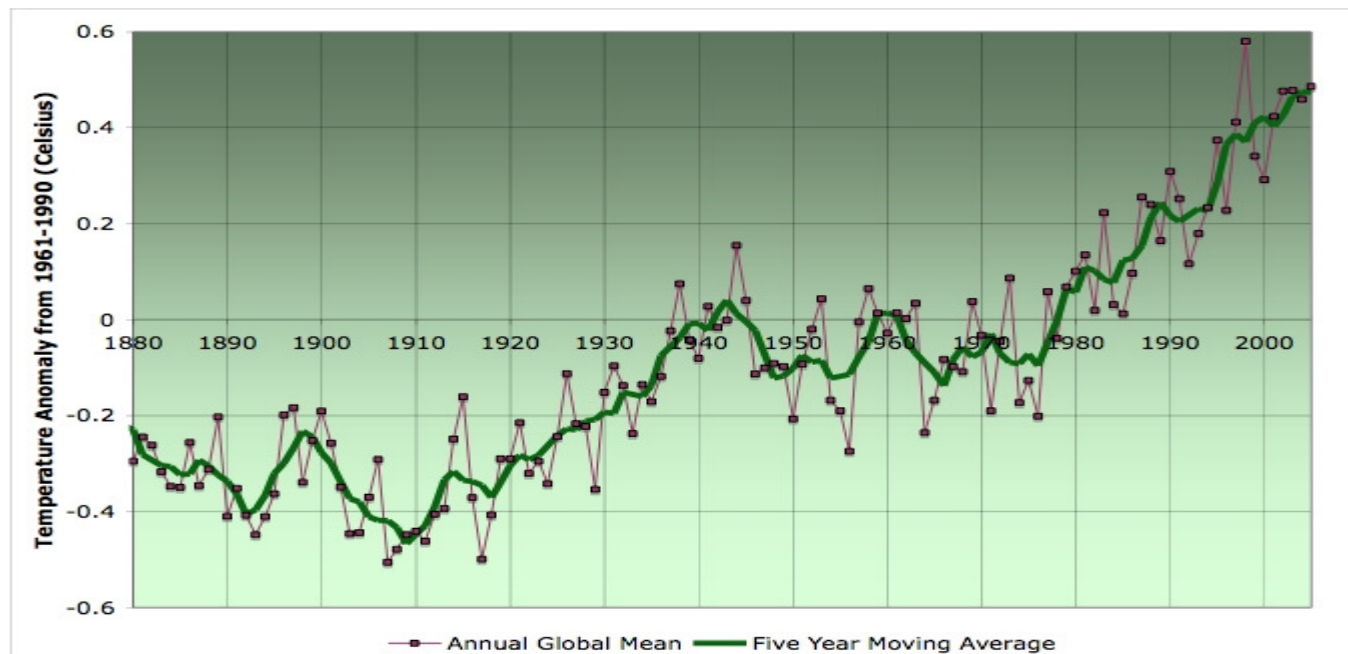
Alternative Theories

- The sun – natural activity- solar flares/ sun spots
- Communist conspiracy – Lord Monckton
- All the measurements are wrong !!!



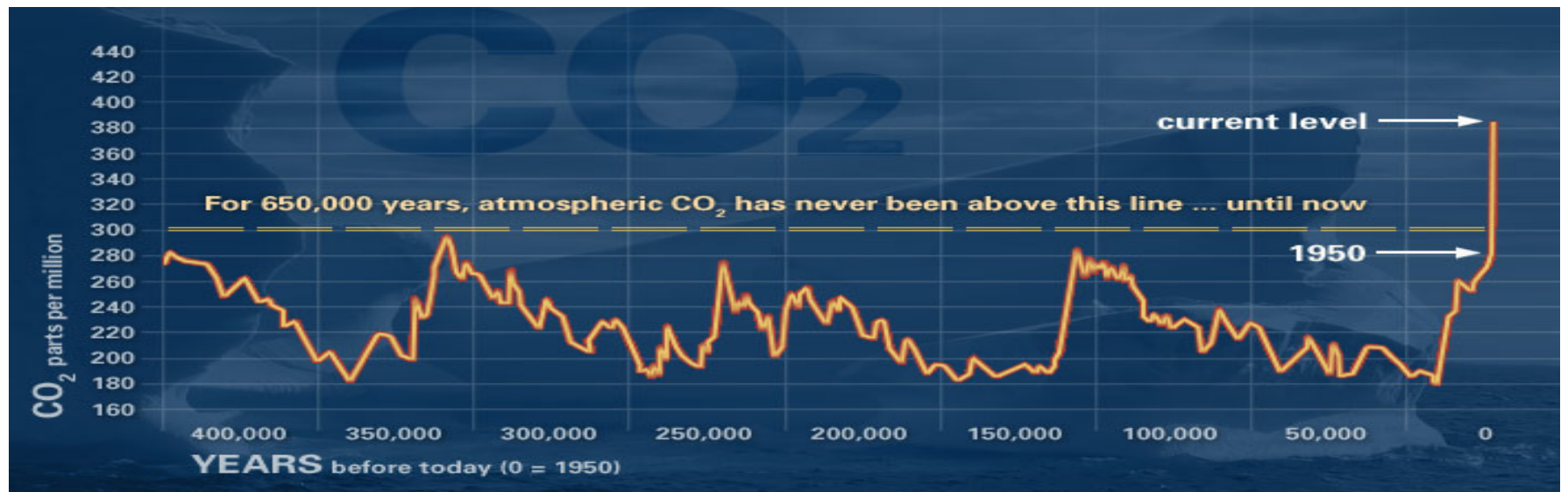
The Scientific 'Community' - temperature

- Berkeley Earth Surface Temperature Project – 1.6 billion temperature reports from 15 pre existing data archives
- Intergovernmental Panel on Climate Change IPCC
- The earth has warmed up to 0.75 degrees centigrade since the industrial revolution



The Scientific 'Community'- atmospheric CO₂

- The earth has warmed up to 0.75 degrees centigrade since the industrial revolution



Impacts - UK

- Increased temperatures
- Increased winter rainfall
- Lower summer rainfall
- Rising sea levels
- Ground movement
- More extreme weather events

What are the key issues of vulnerability to the impacts of climate change in your area?

Impacts – Yorkshire and Humber



- Higher temperatures
- Coastal zone more tidal flooding and erosion
- Larger Indicative Flood plain coastal and rivers
- More river flooding in winter
- Urban surface drainage problems
- Aquifer recharging

What does it have to do with planning?

The Legislative Imperative

Legislative imperative - Europe

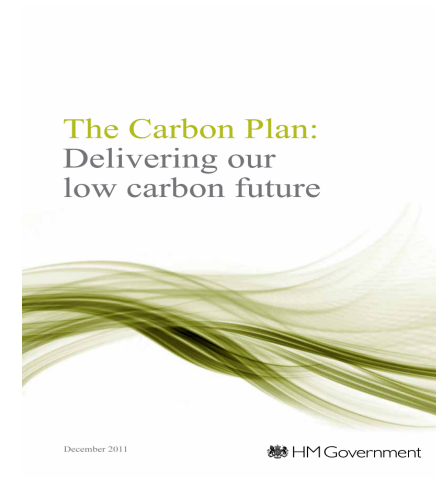
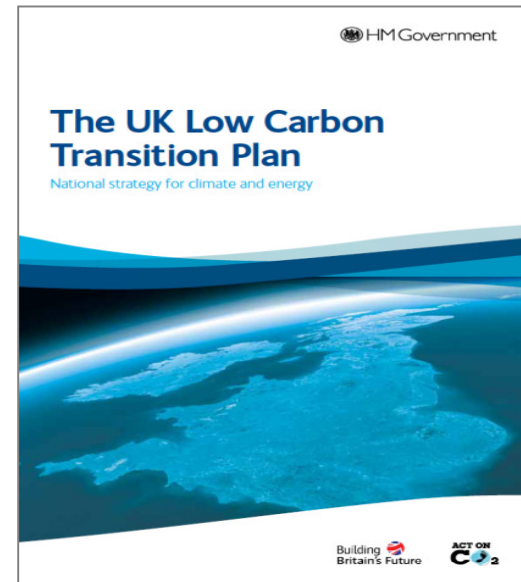
- Cut GHG emissions by 20% from 1990 levels by 2020
- Improve energy efficiency by 20% from 1990 levels by 2020
- Increase energy from renewable sources to 20% of all energy by 2020
- **European Climate Change Programme**
- **EU Directive 2009/28/EC**

Legislative imperative – UK

- We are required, as a country, to reduce greenhouse gas emissions by 80% by 2050 (1990 baseline) and 37% by 2020
- **UK Climate Change Act 2008**

Legislative imperative - UK

- 18% reduction in emissions to 2008 levels - 40% electricity from low carbon, and 29% reduction in emissions from homes **by 2020** – 100% by 2050.
- 80% reduction by 2050



Legislative imperative- UK

- secures 15 % of energy (30% of electricity, 12% of heat and 10% of transport) from renewables by 2020
- **UK Renewable Energy Strategy**

Legislative imperative – Development Plans must.....

- Contribute to the achievement of *sustainable development*
- Have regard to the desirability of *high quality design*
- Include policies designed to contribute to the *mitigation and adaptation to climate change*

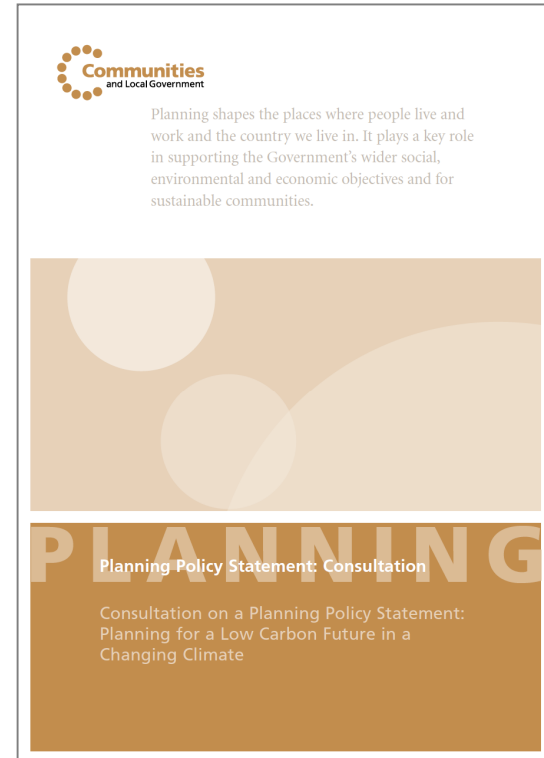
Planning Act 2008 S131 – 183

Decision making principles PPS1 & PPS1 Supplement – Planning and Climate Change

- *Spatial distribution, location and design planned to limit carbon dioxide emissions*
- *New development make good use of opportunities for decentralised and renewable or low carbon energy*
- *New development planned to minimise vulnerability in a changing climate*
- *Climate change considerations integrated into all spatial planning concerns*
- *Mitigation and adaptation should not be considered independently of each other and new development should be planned with both in mind*
- *Sustainability appraisal should be applied to shape planning strategies and policies that support the key objectives; and*
- *Appropriate indicators for monitoring and reporting should be selected*

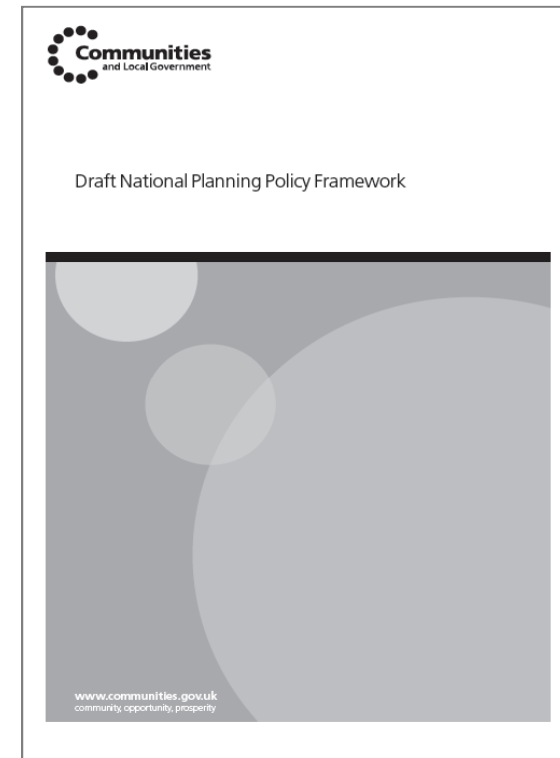
Low Carbon Future in a Changing Climate

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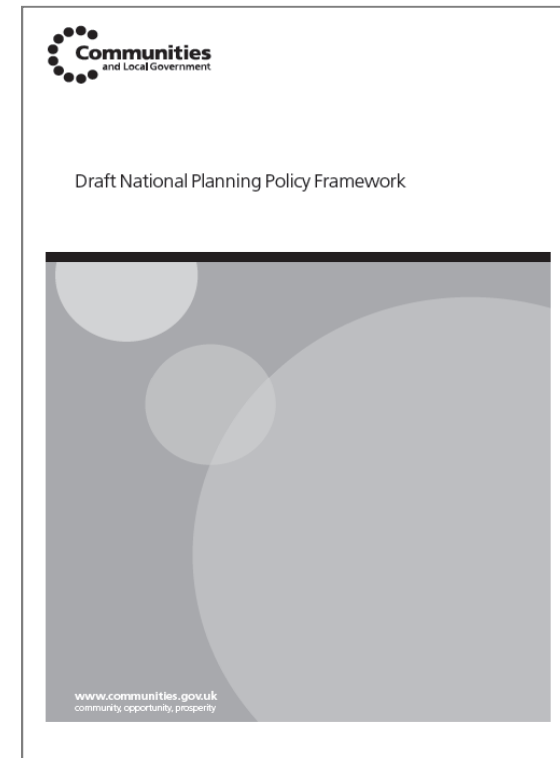
Legislative imperative.... Soon?

- Use the planning system... to mitigate and adapt to climate change, including moving to a low carbon economy (para 10)
- Enable ... reuse of existing resources
- Actively manage patterns of growth to make fullest use of Public transport, walking and cycling,.....(para 19)
- Strategic policies to deliver climate change adaptation and mitigation (para 23) – cross boundary (para 44)
- Economy – meet the twin challenges of global economy and a low carbon future (para 71)



Legislative imperative

- Climate Change Flooding and Coastal Change Sections relating to:
 - Support cuts in greenhouse gas emissions
 - Support the delivery of renewable and low carbon energy
 - Minimise vulnerability to climate change and manage the risk of flooding
 - Manage risk from coastal change
- Transport – section encouragement to provisions which support reduction in GHG emissions



Climate Change adaptation and mitigation

Climate Change adaptation

Adaptation involves adjustments to natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities.

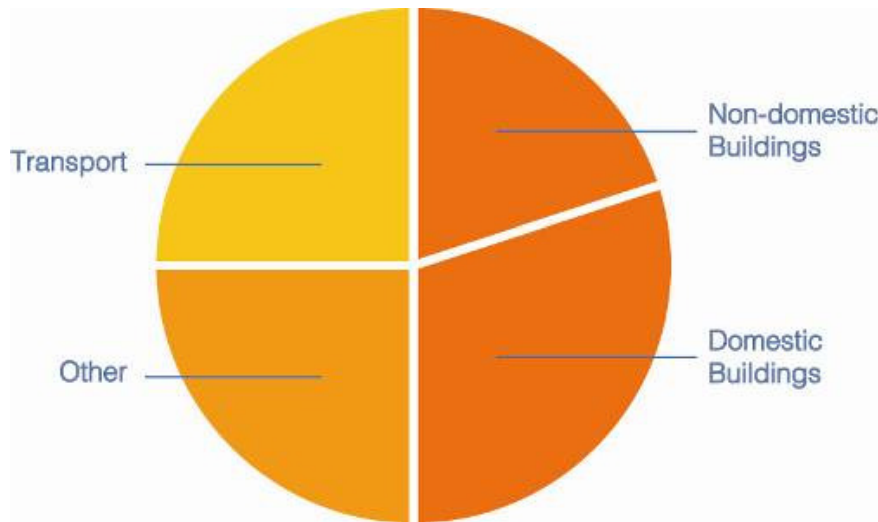
Hence - adapting

Climate Change mitigation

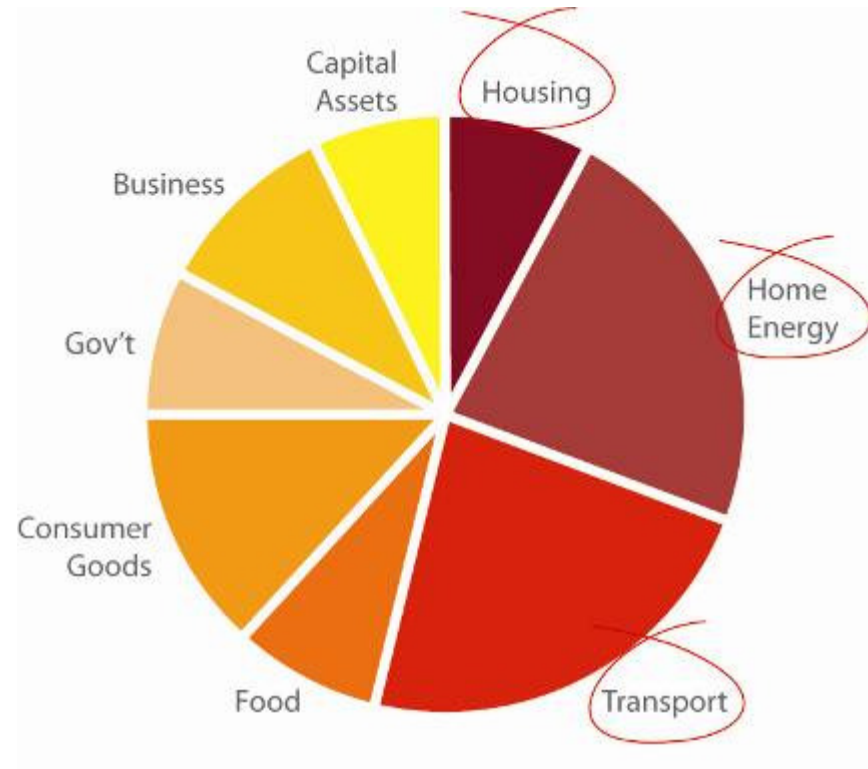
Mitigation involves taking action to reduce the impact of human activity on the climate system, primarily through reducing greenhouse gas emissions.

So where do UK GHG emissions come from?

Greenhouse Gases – Which can planners influence – overall quantity or rates of emission?



UK CO2 emissions by source



UK average by resident

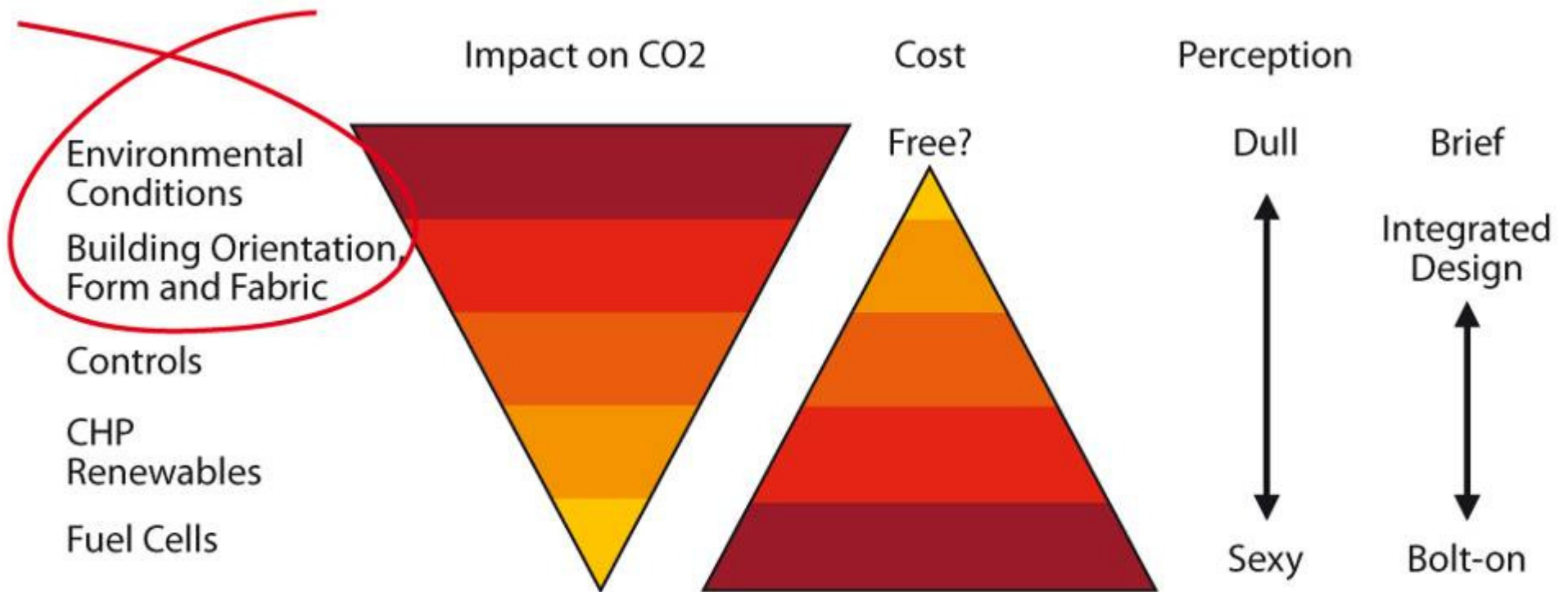
The pub less pub quiz – 12 questions

- Use the Quiz Sheets in front of you.
- Do you think this measure is about adaptation or mitigation?
- How would it reduce vulnerability to the effects of climate change or reduce greenhouse gas emissions?

Refreshment Break

The energy hierarchy

Zero Carbon Design



Key methods of achieving carbon savings.
What can planners do to reduce carbon
emissions?

Group Activity

What is a low carbon economy?

Low Carbon Economy

- All waste should be minimised – reduce, reuse, recycle
- Energy should be produced using low carbon energy sources and methods – renewable and alternative energy sources, fuels and sequestration
- All resources (in particular energy) should be used efficiently – more efficient energy conversion devices, combined heat and power
- Wherever practical local needs should be served by local production – food, materials, energy
- There is high awareness and compliance with environmental and social responsibility initiatives – industry, commerce and individuals
-

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Thank you