

UNECE Meeting on Environmental Indicators

United Nations, Geneva

31 August to 2 September 2009



Indicators on air and climate change

Stephen Hall

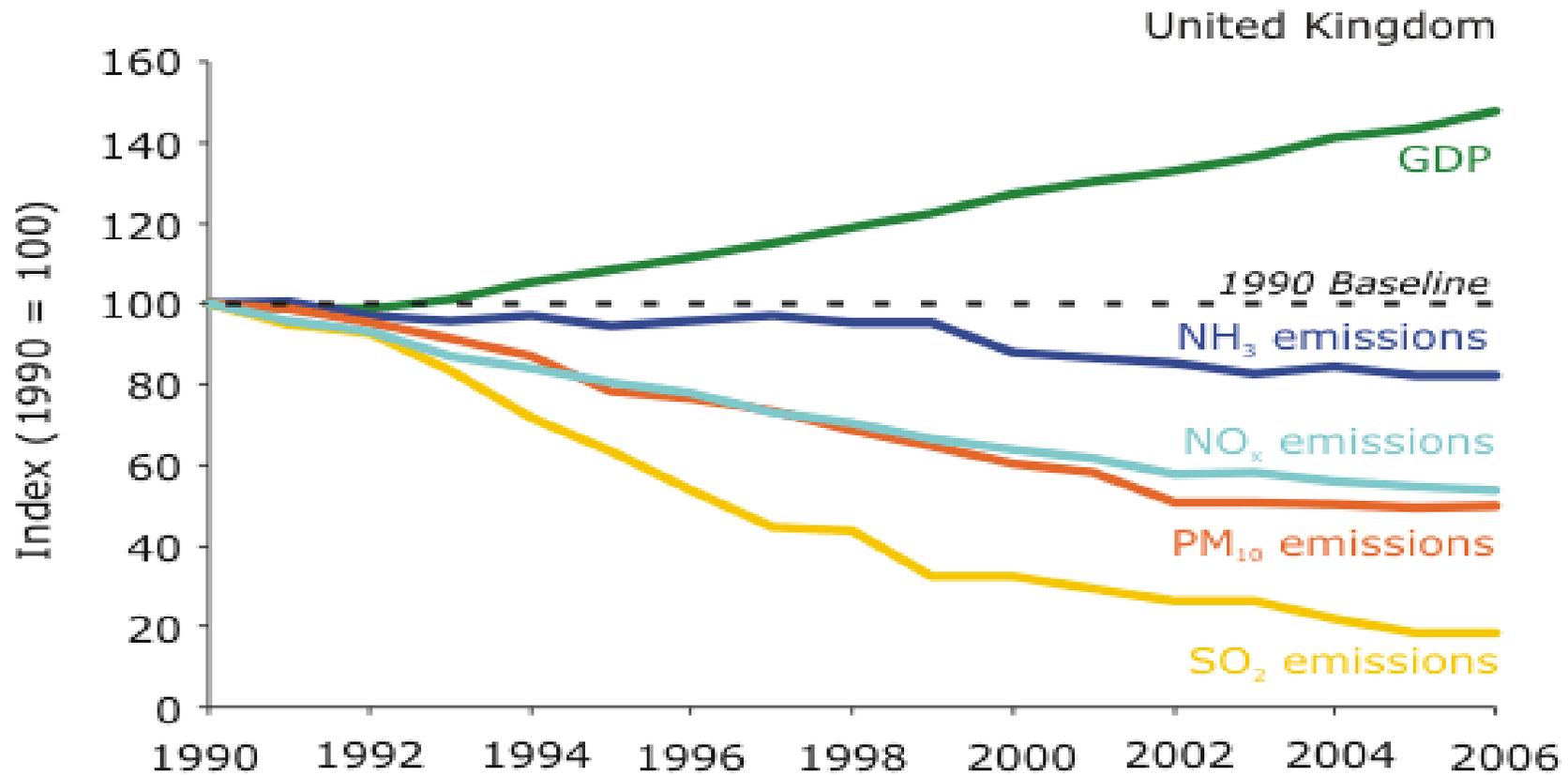
Department for Environment, Food and Rural Affairs

United Kingdom

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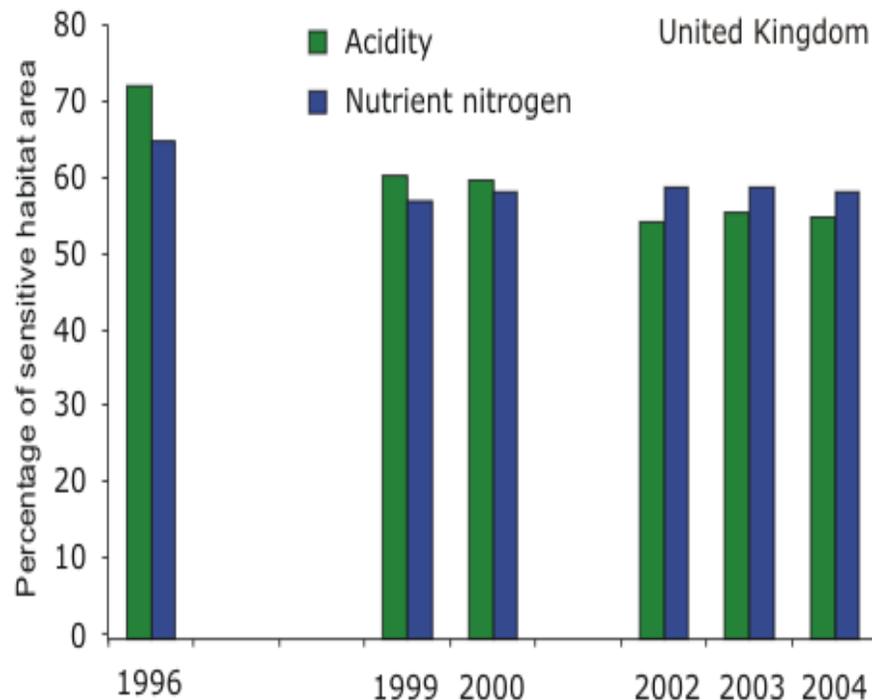
Pollutant emissions by source



Source: AEA Energy and Environment, ONS

Ecological impacts of air pollution

- Area of sensitive UK habitats exceeding critical loads for acidification and eutrophication
- Caused primarily by NO_x , SO_2 and NH_3



Notes: Since 2000 inclusion of nitric acid deposition increases the area of critical load exceedence compared to earlier periods; 3-year average deposition is used to reduce substantial year to year variability.

Source: Centre for Ecology and Hydrology

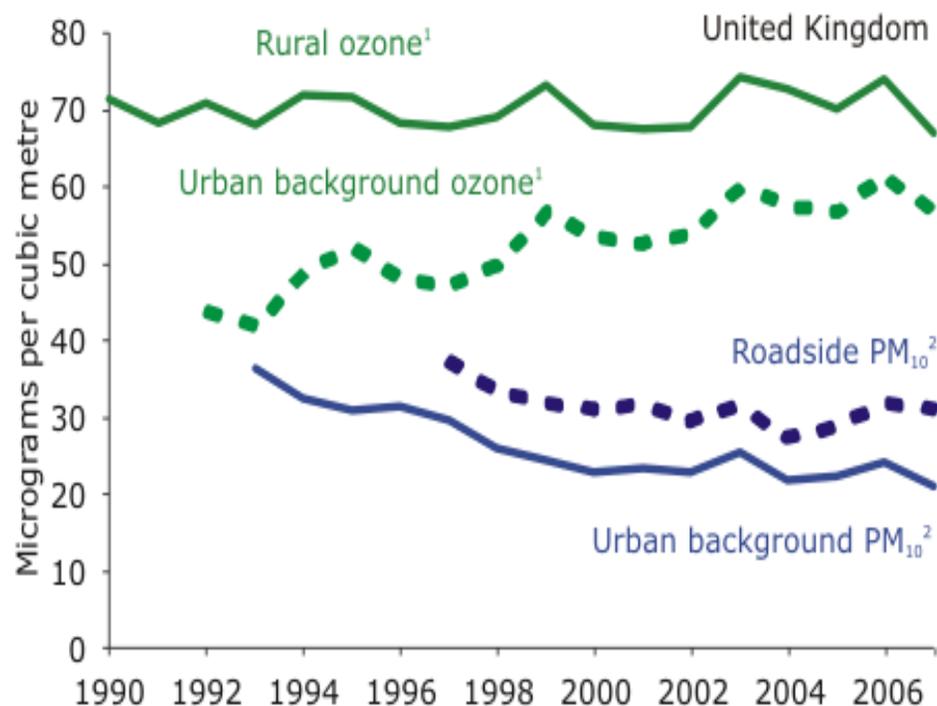
Air quality and health



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- Annual levels of particles and ozone
 - Rural, urban ozone
 - Urban background and roadside PM₁₀



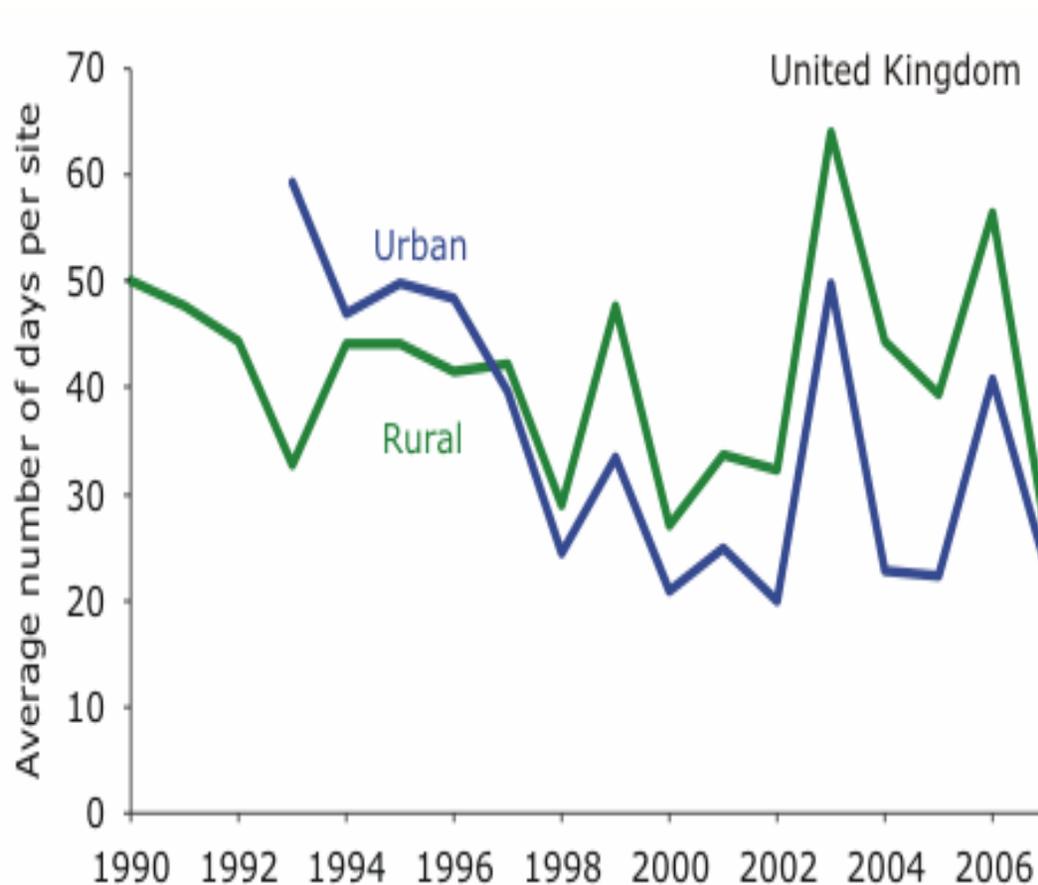
1. Ozone index shows annual mean of the daily maximum 8 hour running mean.

2. PM₁₀ index shows annual average.

Source: Defra, AEA Energy and Environment

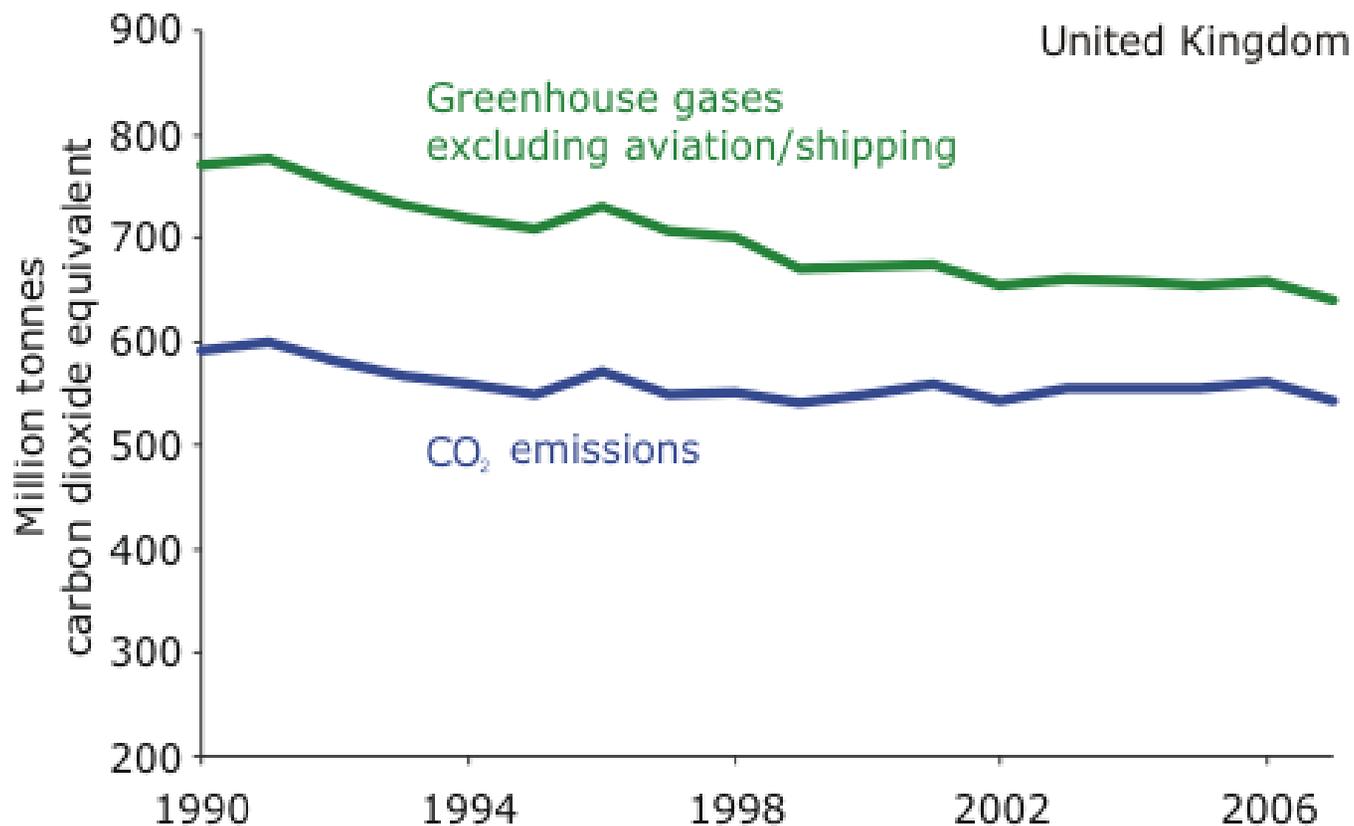
Air quality and health

- Days when air pollution is moderate or higher



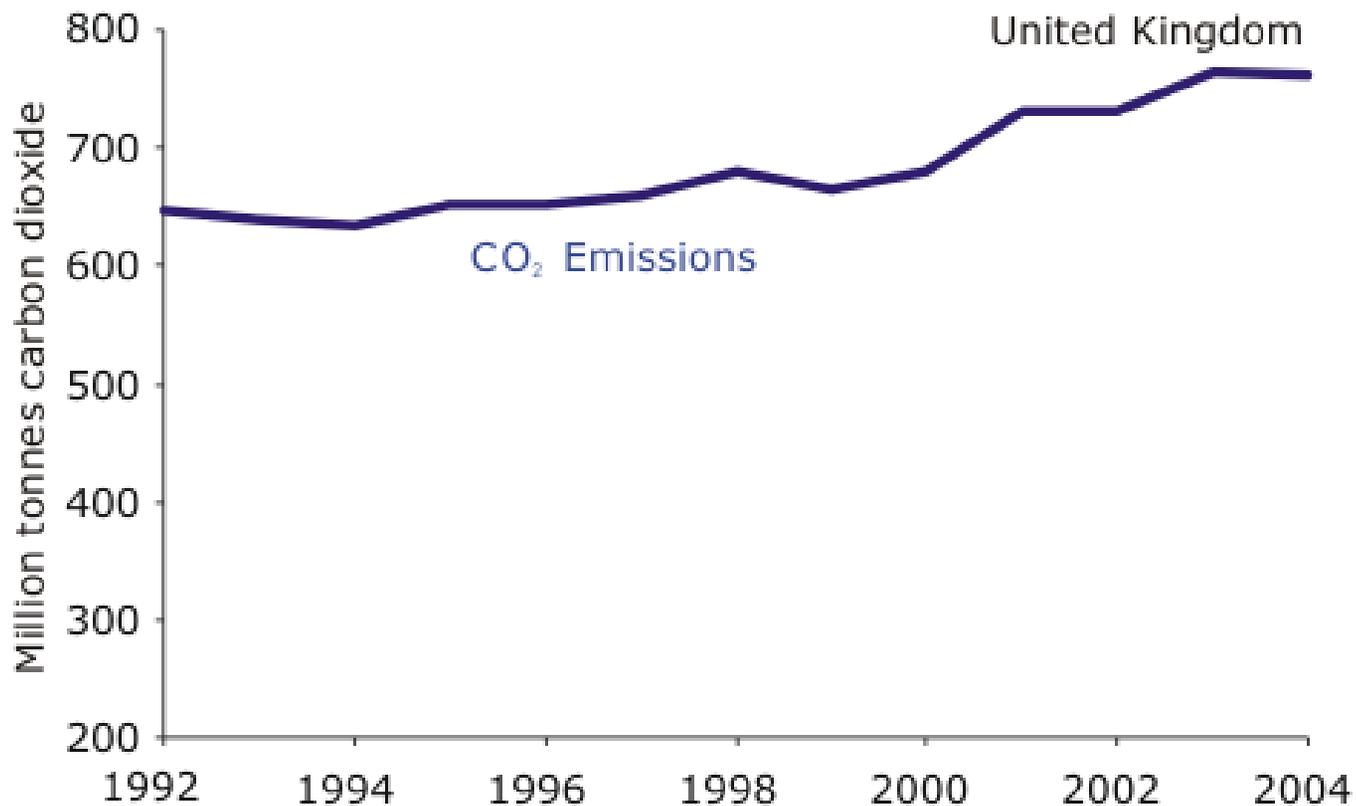
Source: Defra, AEA Energy and Environment

GHG and CO₂ emissions



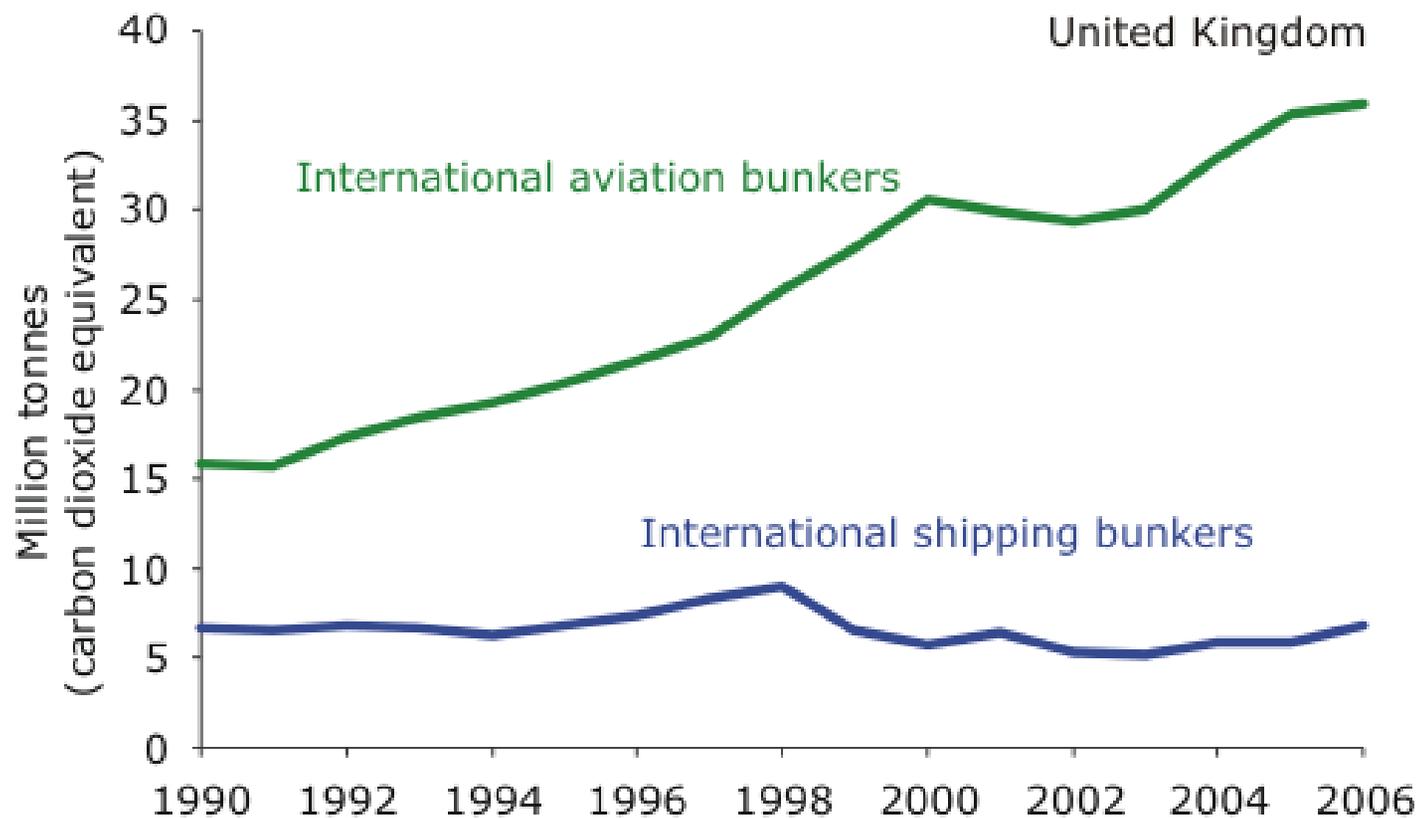
Source: Defra, BERR, AEA Energy and Environment

'Embedded' emissions



Source: Defra, SEI, ISA

Aviation & shipping emissions



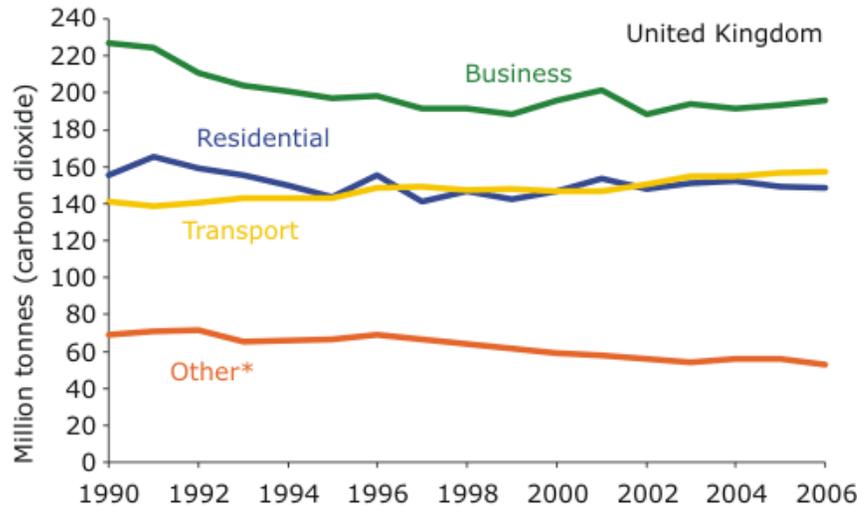
Source: AEA Energy and Environment



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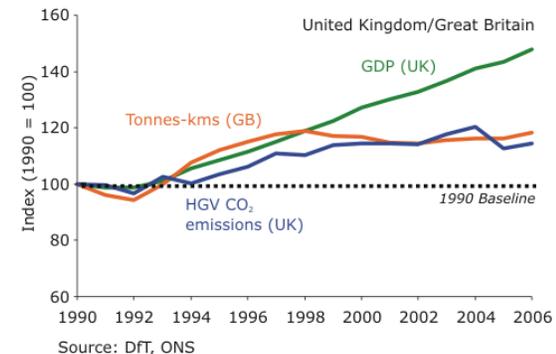
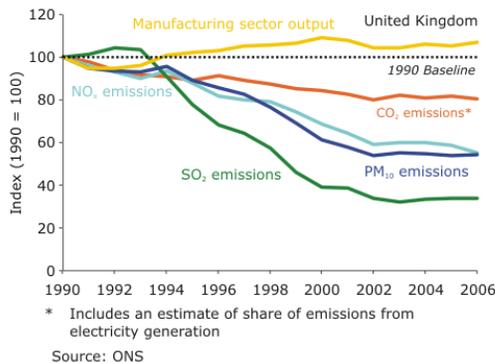
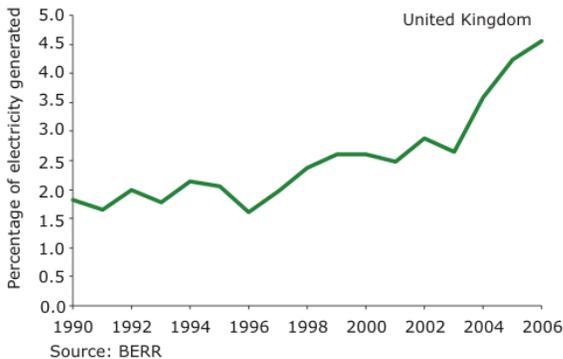
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CO₂ emissions and energy use



- Energy use
- Sectoral
- Transport

*Mostly of public, industrial and agricultural sectors
 Notes: Data from 1990 are presented as National Communications categories and therefore not comparable with previous years.
 Source: AEA Energy and Environment



Adaptation indicators

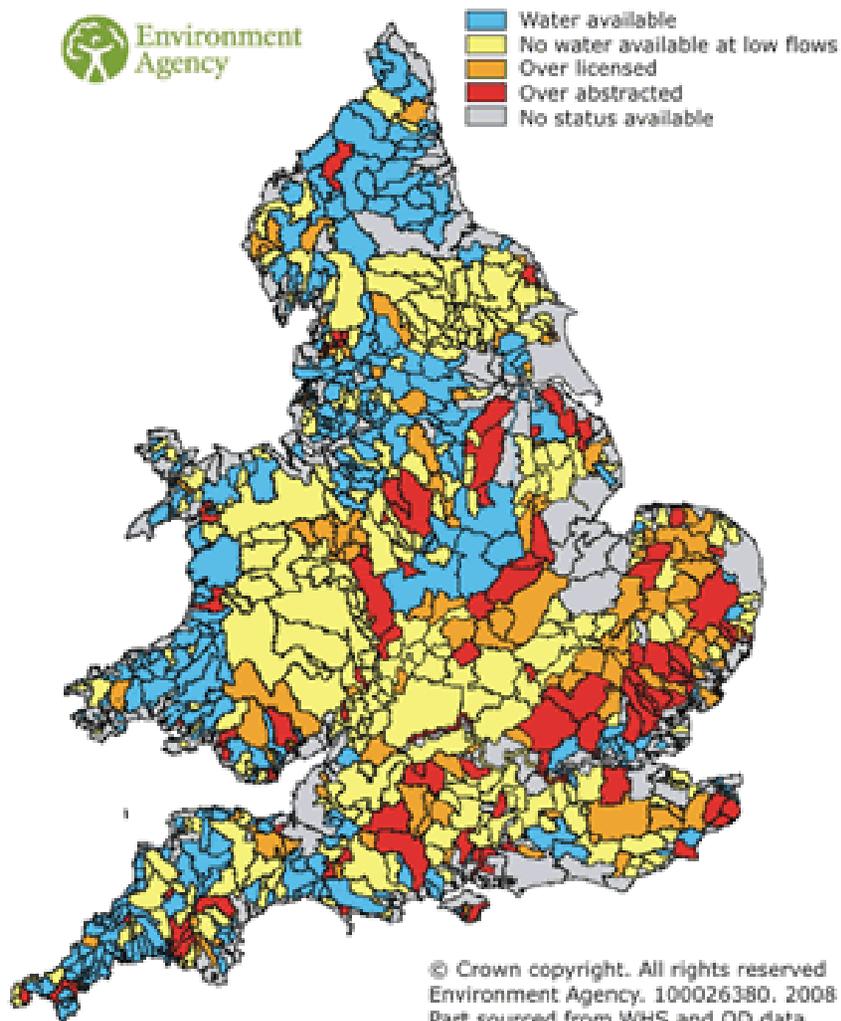
- Considerable challenge
- Work recently started
- But some indicators may already exist ...

Water stress - winter



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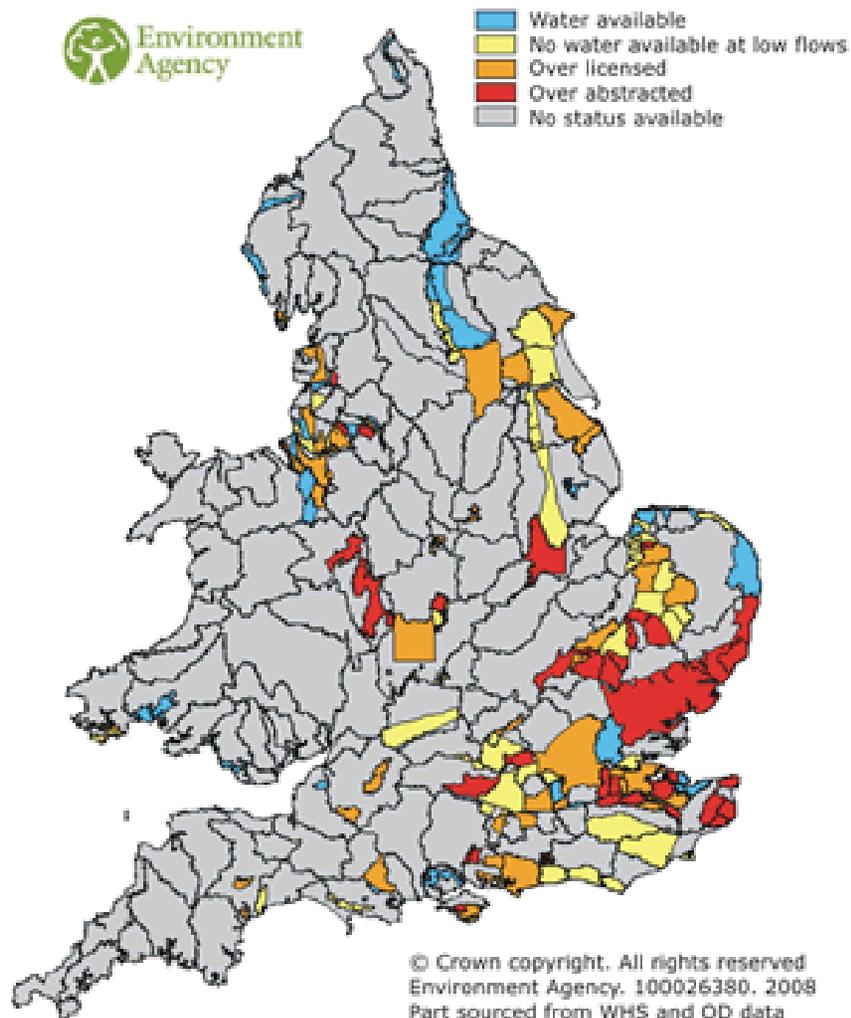
Source: Environment agency

Water stress - summer



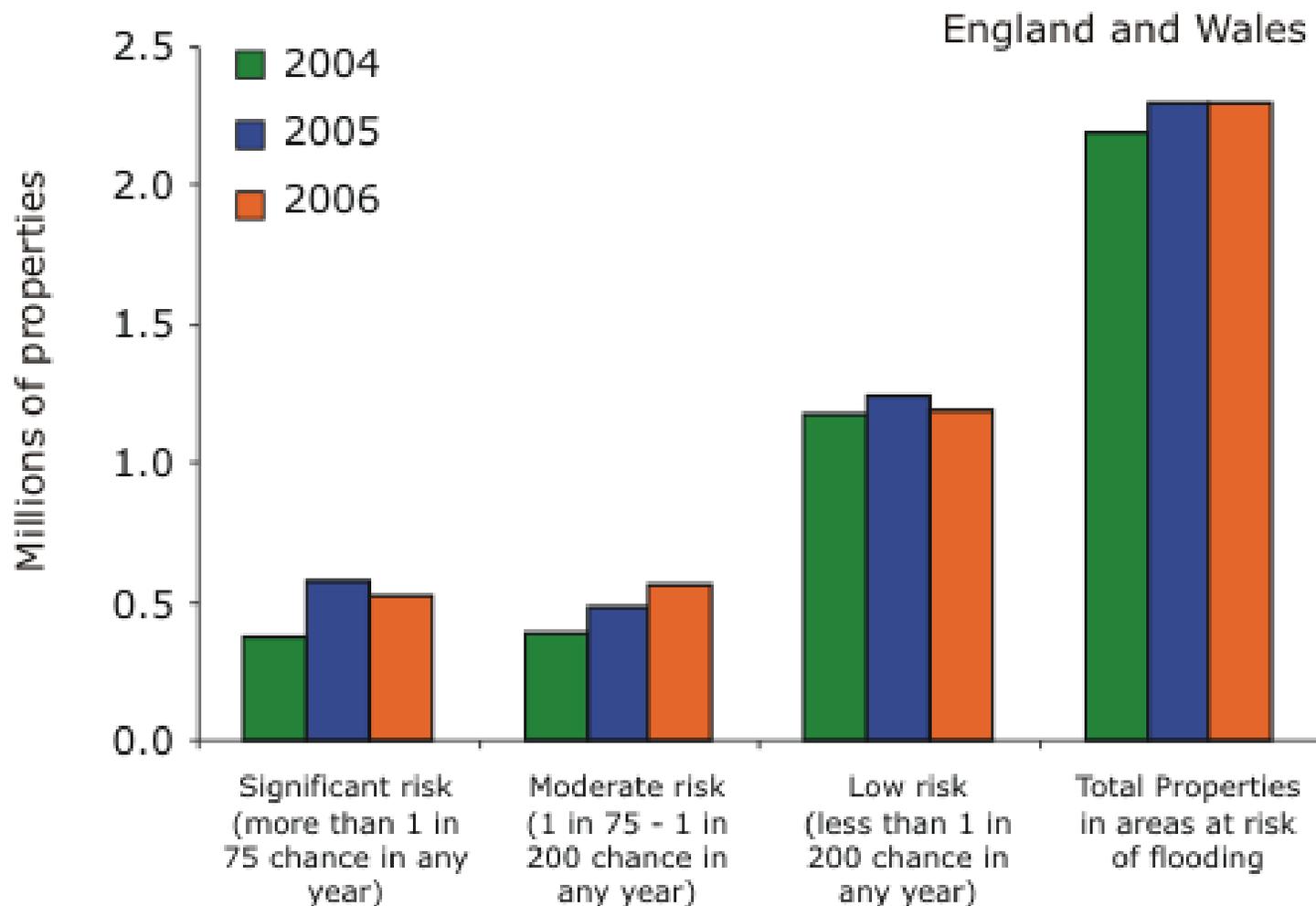
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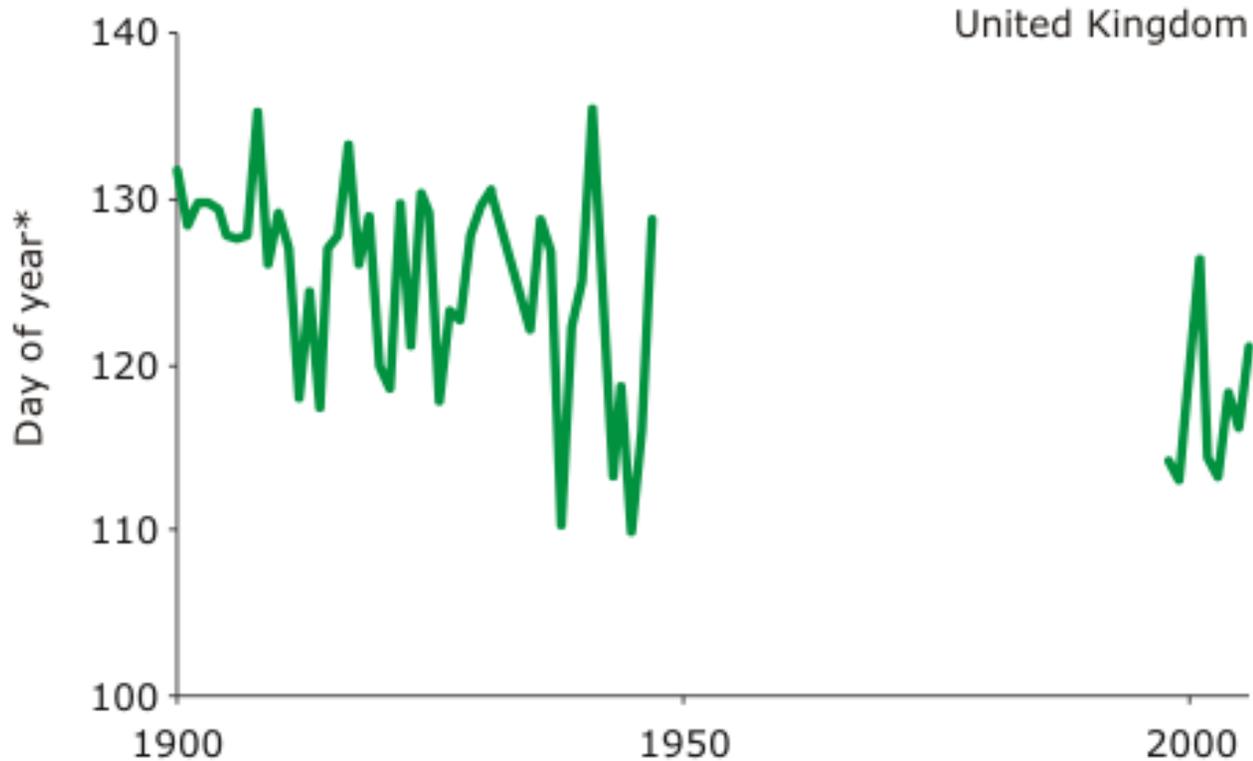
Source: Environment agency

Properties at risk of flooding



Source: EA, Defra

Spring index - phenology



* Number of days after January 1st (e.g. day 121= May 1st)
Source: Royal Meteorological Society, UK Phenology Network

Other adaptation indicators

- Biodiversity indicators?
 - Bird populations
 - Butterflies
 - Plant diversity
 - Species status
 - Habitat status
 - Non-native species