

## **Agriculture, Forestry and Land Management**

# **Mitigating Greenhouse Gas Emissions - A UK Perspective**

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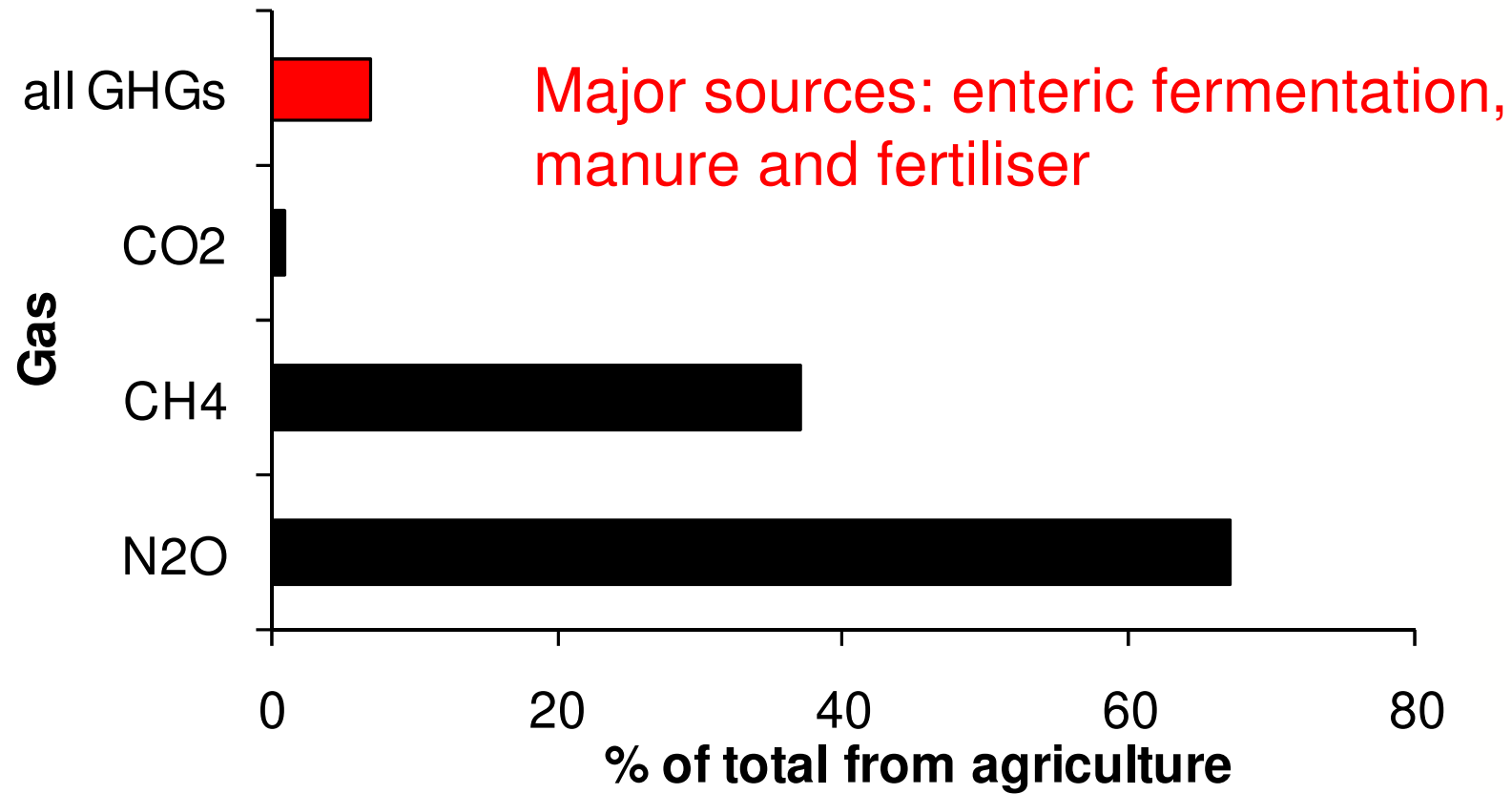
# My presentation

- The UK context
- UK legislative framework
- Abatement potential and policy instruments
- Practical action
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# GHG Emissions from UK agriculture

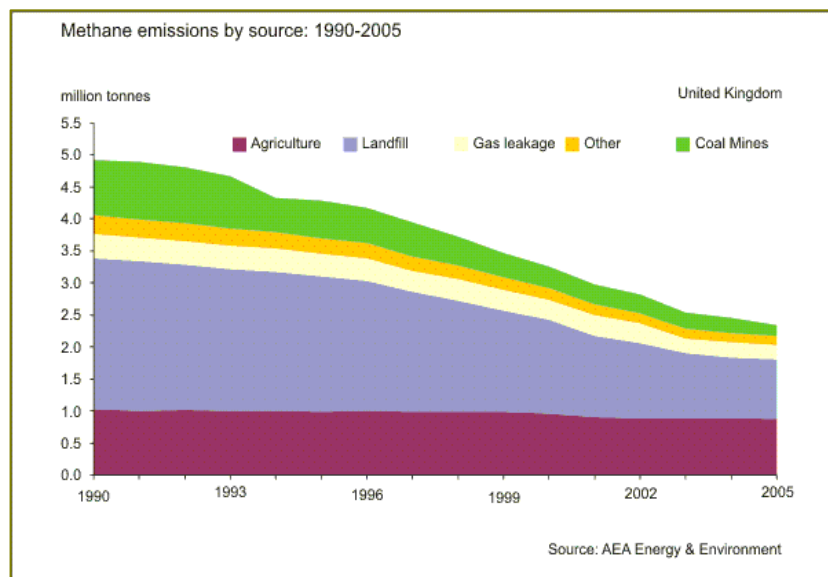


# Emissions of Methane, Nitrous Oxide and Carbon Dioxide in the UK (MtCO<sub>2</sub> equivalent)

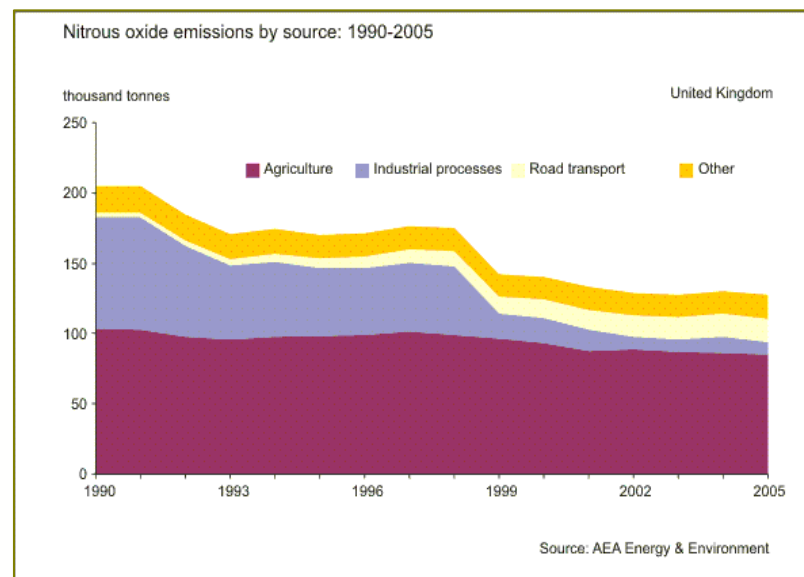


**defra**  
Department for Environment  
Food and Rural Affairs

|              | CH <sub>4</sub> | N <sub>2</sub> O | CO <sub>2</sub> | Total       |
|--------------|-----------------|------------------|-----------------|-------------|
| Source       | 18.3            | 26.9             | 26.1            | 71.3        |
| Sink         |                 |                  | -23.7           | -23.7       |
| <b>Total</b> | <b>18.3</b>     | <b>26.9</b>      | <b>2.4</b>      | <b>47.6</b> |

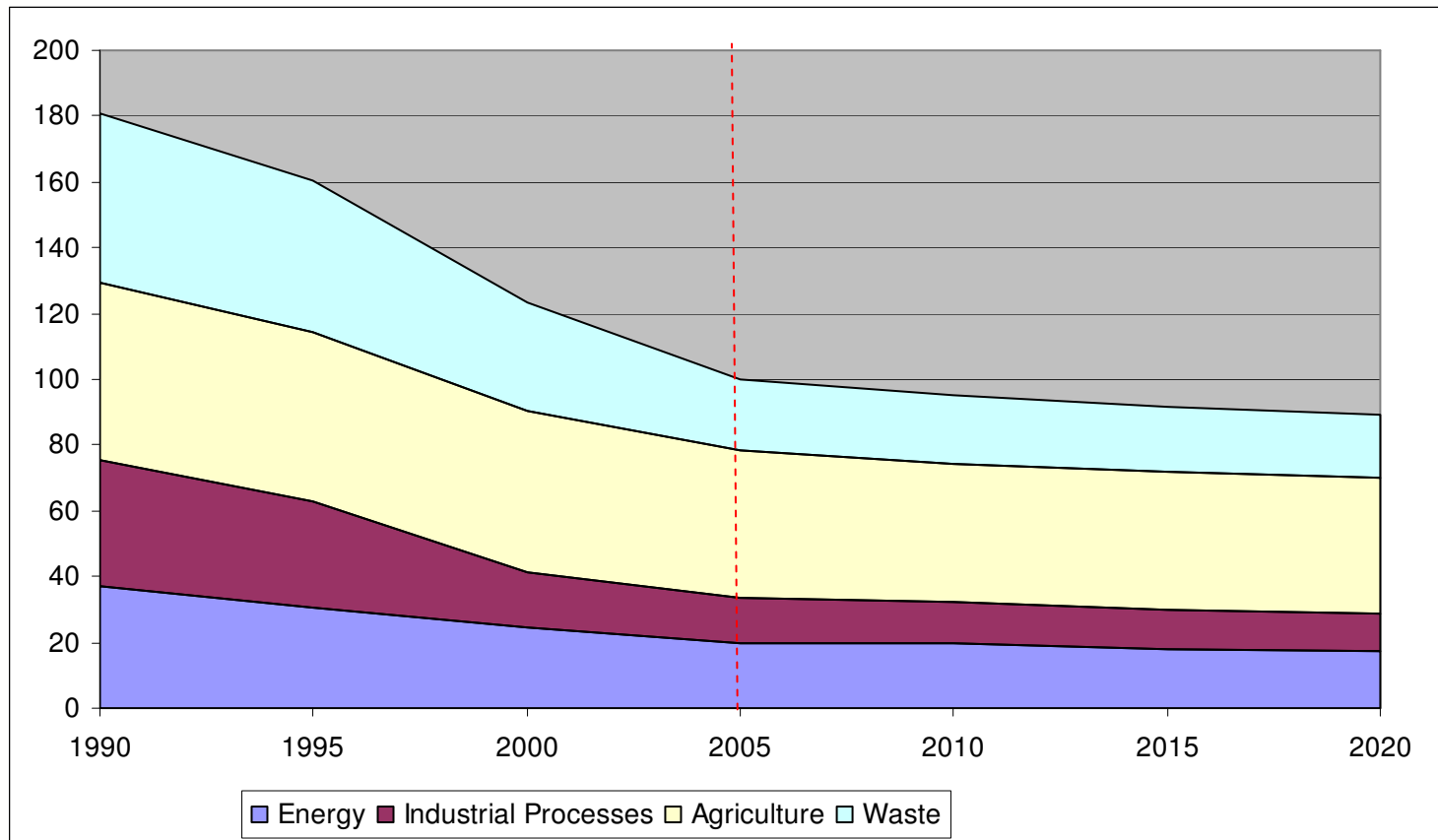


**Methane emissions 1990 - 2005**



**Nitrous oxide emissions 1990 - 2005**

# Latest BAU Projections for Non-CO<sub>2</sub> GHGs



Source: CCC

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# Future legislative framework - Climate Change Bill



Looking to strengthen domestic policy framework through:

- creating a framework to improve carbon management in the UK - The Climate Change Bill

# Key elements of the Climate Change Bill

## Targets

Long and medium term targets: reductions of at least 80% by 2050 against all Kyoto greenhouse gases and by at least 26% by 2020, through action in the UK and abroad

## Budgets and accountability

Set over **five-year periods**, Five-year carbon budgets with three budgets **set ahead** to set out our trajectory and help long-term business planning and investment, backed by annual progress reporting to Parliament

## Committee on Climate Change

New independent body to advise Government on carbon budgets and where the least-cost savings could be made

## Measures to reduce emissions

Powers to introduce emissions trading schemes more quickly and easily, including new Carbon Reduction Commitment. Biofuels. Waste.

## Adaptation

Government to report at least every five years on climate change risks, and programme to address them

# Climate Change Bill: timeline



“And every new policy will therefore be examined for its impact on carbon emissions, not just those which reduce emissions but those which increase them. Where emissions rise in one sector we will have to achieve corresponding falls in another.”

*Prime Minister, 1 May 2008*

“In establishing this framework we are creating what amounts to a parallel currency and a parallel budget that will have to be managed alongside the revenue and expenditure the Treasury manages today.

Just as our public finances must balance over an economic cycle for the health of the economy, we must live within our new carbon budgets for the health of the wider world; and play our role in avoiding the threat of catastrophic climate change.”

*Chancellor of the Exchequer, 12 December 2007*

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- Clear that the agriculture, forestry and land management sector will need to play its part in UK targets
- Work by IGER/ADAS in 2007 suggested realistic abatement potential of 10% to 15% by 2020
- Committee on Climate Change currently developing more sophisticated Marginal Abatement Cost Curves
- Final report due shortly, but expecting their estimates to be a similar magnitude

# What are the challenges in the UK to unlocking potential?

- Existing policy framework is limited and primarily focuses on other objectives
- UK inventory's not sophisticated enough to record some savings
  - Smarter inventory research due March 2009

# Is emissions trading cost effective for this sector?

- In 2007 commissioned initial study by NERA to look at potential of Emissions Trading for sector
- Characteristics of sector make ET difficult and expensive to administer and monitor, because:
  - Lots of small units - 90% of holdings emit 600 tCO<sub>2</sub>e or less per year (very small in ET terms) and account for two-thirds of total emissions
  - Very different compared to other sectors where smallest 80% emitters only contribute to 5% emissions
- Did not appear to be cost effective at time of report

- But not all options explored, so further analysis required:
  - Only included abatement options with robust evidence base
  - Cap-and-trade option based on assumption that point of obligation would lie on the farmer
  - Cost effectiveness of instruments looked at in isolation and not as a package
  - Conservative assumptions made for some aspects, particularly woodland related GHG abatement
  - Emissions also depend on what boundaries are set

- Did not account for ancillary costs and benefits or targeting of wider environmental impacts
- Emissions trading could bring a number of other benefits such as improved awareness among farmers
- Project and credit based scheme did appear more feasible – could it be a starting point for a mandatory scheme?
- Therefore need to consider these in greater detail

# GHG Policy Instruments Project



- Recently let a project to ADAS to look at this in greater detail. Key aims to:
  - Analyse the abatement potential, relative to the baseline, of current, extended and potential new policy instruments, including:
    - Regulatory
    - Economic (cap-and-trade, project and credits based schemes, price based changes, grants, subsidies, Environmental Stewardship)
    - Voluntary (advice / communication campaigns, voluntary codes, farm assurance schemes etc)

- Identify most cost-effective package of policy instruments (taking account of interactions)
- Develop detailed options for the design and implementation of these instruments
- **Project due to report in Spring 2009**

# Primary cost effectiveness evaluation criteria

- **Potential for emission reduction**
- **Timescale in which emission reduction is delivered**
- **Permanence of reduction**
- ***Cost of implementation***
  - ***Private costs (for each sector)*** - one off, reoccurring, point of obligation/burden sharing etc
  - ***Scheme costs***

# Indirect cost effectiveness evaluation criteria

- ***Potential economic impacts.***
- ***Potential environmental impacts (Soil, Air, Water, Biodiversity, Landscape)***
- ***Potential social impacts***

# Factors relating to practicality of policy measures

- **Political acceptability**
- **Social acceptability**
- **Compatibility with existing policies and objectives**
- **Likelihood of unintended consequences and scope to mitigate these**
- **Flexibility**
- **Sensitivity to external change**

# Further factors influencing selection of shortlisted policies

- ***Will the reduction in GHG emissions register in the UK GHG inventory?***
- **Will the emission reduction be accounted for under Kyoto**
- **Will the instrument allow the emission reduction to be used for compliance with Kyoto or the carbon budgets? E.g. emission reductions incentivised by domestic joint implementation cannot be used for Kyoto targets.**

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# Environmental Stewardship



- A measure under Axis 2 of CAP
- Managed by Natural England
- Currently not explicitly addressing Climate Change but commitment to rectify
- Climate Change likely to become overarching theme

- But difficult to integrate GHG mitigation due to existing criteria (e.g. one criteria is “income forgone” but many mitigation methods are cost negative)
- Possibility under the new Enhanced Farm Environmental Record (EnFER)
  - Being developed by Natural England at present
  - Focus on assessing environmental risk and picking options to address it (e.g. GHG audit and action to mitigate)

## Focus on getting the economics right

- **Creating the market**
  - ‘Banded’ Renewable Obligations Certificates (2 ROCs/MWh)
  - Feed-in tariffs
  - Standard and protocol for digestate (end of year)
- **Developing the infrastructure**
  - Bio-energy Capital Grants Scheme
  - Axis 1 of Rural Development Programme for England 2007-2013 (RDPE)

# Demonstrating its potential

- UK Government providing £10M for new demonstration projects
- Will demonstrate how 'state of the art' use of anaerobic digestion can contribute to:
  - Greenhouse gas reduction
  - Renewable energy generation
  - Waste management
  - Sustainable and diversified farming
  - Environmental protection of water
- Will encourage commercial investment by demonstrating benefits of anaerobic digestion to potential developers and customers

# Publicly Available Standard (PAS) 2050



- Also developed a Publically Available Standard for measuring GHG emissions
- Sponsored by Defra and Carbon Trust
- Developed by British Standards Institute
- Currently working with the UK Accreditation Service to develop an accreditation process

- PAS aims to:
  - Enable companies to assess the GHG-related impacts in their products and reduce them
  - Provide agreed methodology of measuring GHG emissions that can be applied across a wide range of products, services and their supply chains

- Allow a consistent and comparable approach to supply chain measurement of GHGs across different markets
- Assist in defining an internationally agreed standard

- Three key Defra food research projects have fed into the PAS:
  - Scenario building to test the PAS (FO0404)
  - Greenhouse Gas impacts of Food Retailing (FO0405)
  - Understanding the GHG impacts of food preparation and consumption in the home (FO0406)

# Engaging the sector

- Government also working closely with the sector to secure their support:
  - Rural Climate Change Forum
    - High level group of key stakeholders with independent Chair that meets four times a year
    - Provides advice both Government and Committee on Climate Change
    - Main focus on challenging and supporting research, policy development and communications

- **Farming Futures Project**
  - Defra funded but lead by sector (NFU, CLA, AIC, AHDBs)
  - Provides trusted advice to farmers and land managers through short , concise factsheets, workshops, trade stands etc
  - Secured considerable in kind support from partners in delivering the project
  - [www.farmingfutures.org.uk](http://www.farmingfutures.org.uk)
- **Helped secure industry led action**
  - Climate Change Task Force (Part of the Solution report and Milk Roadmap)

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# International Sustainable Agriculture



- Multilateral engagement:
  - Methane to Markets partnership
  - OECD Joint Working Party on Agriculture & Environment
  - UNFCCC – Adhoc Working Group for Long-term Cooperative Action - paper on mitigation from agriculture for the Poznan Conference Of Parties
- Bilateral engagement:
  - China – joint Work Programme on Sustainable Agriculture & Fisheries, and Sustainable Agriculture Innovation Network (SAIN)
  - Germany – experts’ seminar in February 2008
  - France – experts’ seminar in 2009
  - New Zealand – collaboration on R&D and emissions trading

- **Thank you**
- **Any questions?**