



# Sector 5 Land Use, Land Use Change and Forestry Greenhouse Gas Inventory & Projections

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# Overview

- What is included for LULUCF in GHG Inventory?
- Data & methods
  - 2007 Inventory data
  - Projections
- Future Requirements
  - Kyoto Protocol Reporting
  - Domestic targets
  - AFOLU
  - Post 2012
- Conclusions

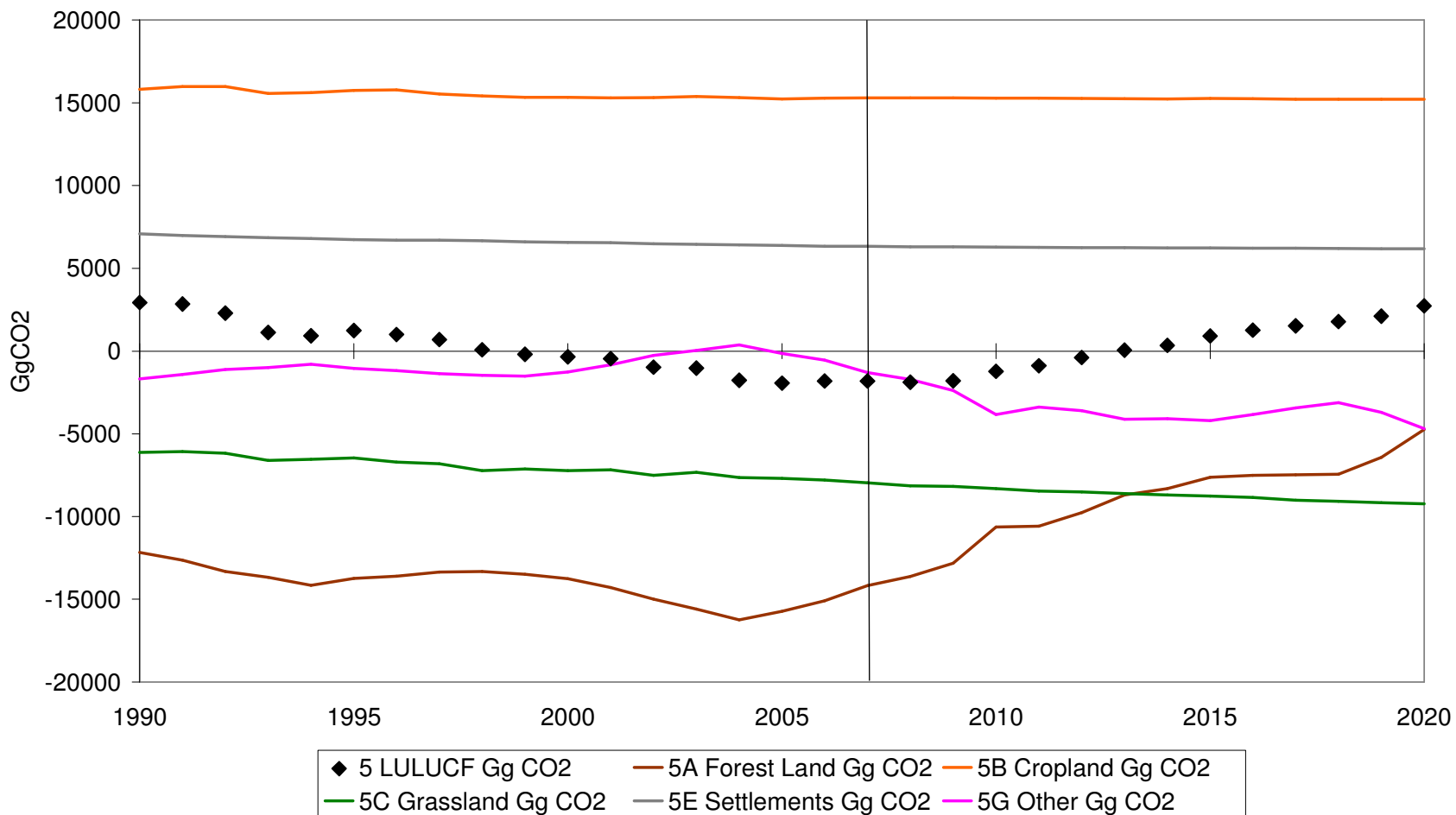
- **Based on requirements of UNFCCC as in official Guidelines & Guidance**
- **Primarily due to changes in area of land use categories**
  - Calculated for each DA separately then combined for UK
  - Afforestation updated annually (Forestry Commission)
  - Other changes updated less often (Countryside Surveys)
- **Emissions AND Removals**
- **Changes in stocks of plant and soil carbon**
  - Calculated using Emission/Removal Function combined with matrix of changes in areas of land use
  - Carbon density for each land use category assumed “fixed”
  - Change between categories occurs over extended period
- **Other Emissions/Removals**
  - Some specific but limited land management activities
  - Some specific activities emitting  $N_2O$ ,  $CH_4$  (e.g. forest wildfires)

- **5A: Forest Land**
  - 5A1: Forest land remaining Forest Land (Planted before 1990) (**B+**, **S+**)
  - 5A2: Land converted to Forest Land (Planted after 1990 therefore KP Afforestation) (**B+**, **S+**)
- **5B: Cropland**
  - 5B1: Cropland remaining Cropland (Application of lime, cultivation of Fenland)
  - 5B2: Land converted to Cropland (**S-**)
- **5C: Grassland**
  - 5C1: Grassland remaining Grassland (Application of lime, peat extraction)
  - 5C2: Land converted to Grassland (**S+**)
- **5D: Wetlands (in Grassland or Other Land for UK)**
- **5E: Settlements**
  - 5E1: Settlements remaining Settlements
  - 5E2: Land converted to Settlements (**S-**)
- **5F: Other Land (Zero for UK)**
- **5G: Other Activities**
  - Harvested Wood Products (**+**)

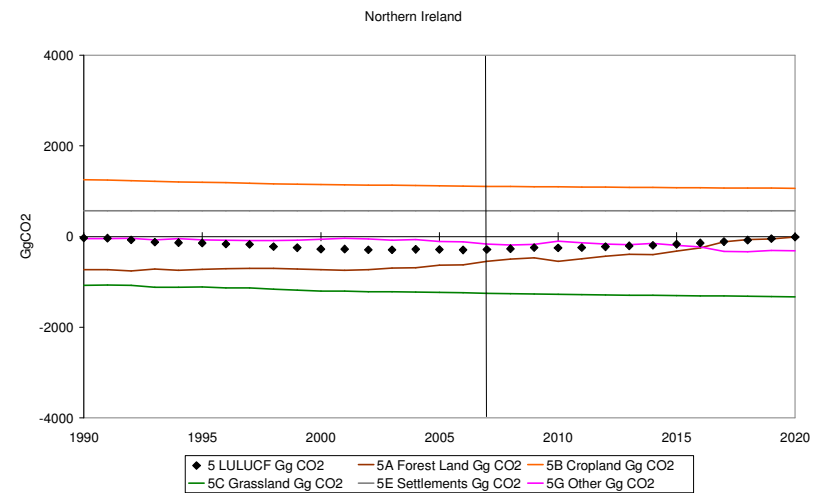
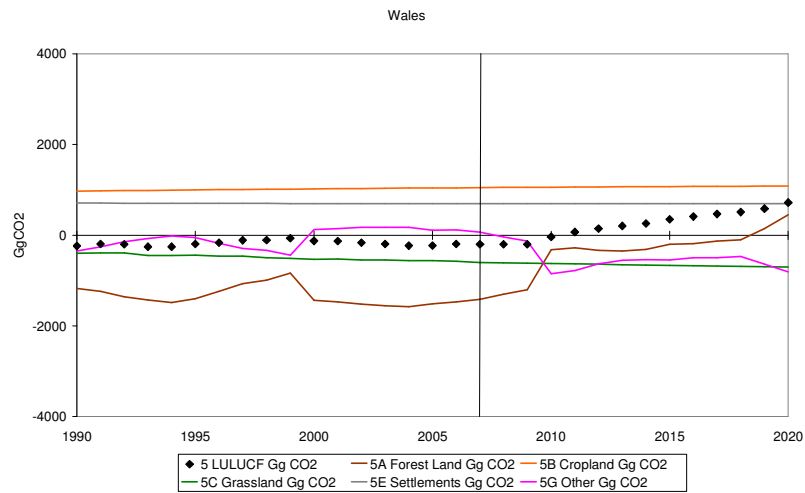
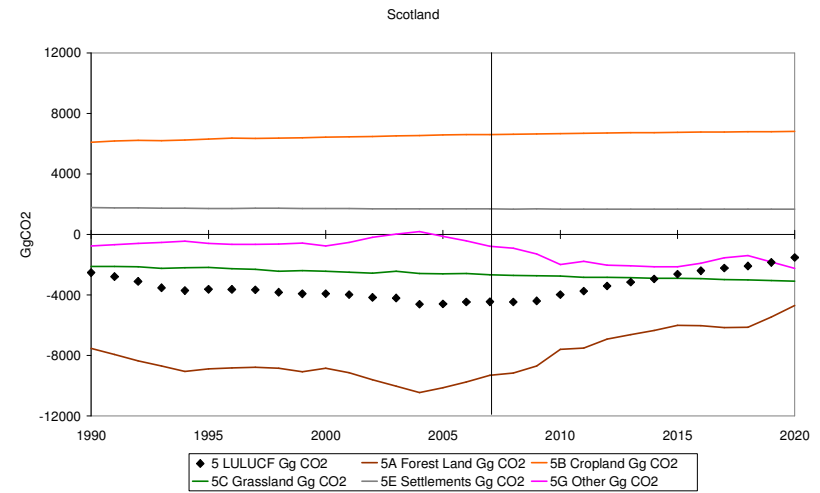
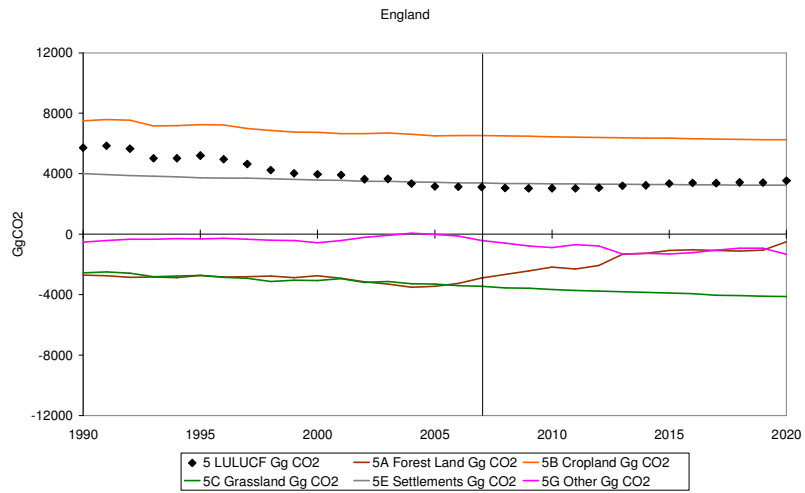
<b>Emission/removal, Gg CO<sub>2</sub>e</b>	<b>1990-2006 inventory</b>	<b>1990-2007 inventory</b>
1990 CO <sub>2</sub>	2928	2929
2006 CO <sub>2</sub>	-1953	-1816
1990 CH <sub>4</sub>	17	17
2006 CH <sub>4</sub>	21	30
1990 N <sub>2</sub> O	8	8
2006 N <sub>2</sub> O	4	4

- **Projections (“Mid”)**
  - Assume “Business as usual” in land use  
*i.e. annual land use changes in future are same as in recent past*
  - Afforestation: most recent year of planting
  - Deforestation: most recent data
  - Other land use change: Countryside Surveys 1984 & 2000 (*to be updated to 2000 & 2007 Surveys*)

UK



# Projections for DAs





- **Kyoto Reporting**
  - UK will report on ARD and Forest Management 2008-2012 in 2014
  - Interim reporting of these activities at DA scale
  - UK planned to report for each cell in a 20km x 20km grid covering the UK
  - UK methodology in development
  - UN has not provided tools to report at such a fine scale
- **Domestic targets**
  - DAs in process of developing own targets – Scotland furthest advanced
  - Lack of clarity for requirements of GHG Inventory etc. to track or predict achievements against target
  - What to track & project?
    - All LULUCF GHG Categories?
    - Policies & Measures in published Climate Change plans?
    - Policies & Measures that have financial benefits for land managers?
    - Something else?
    - >>>>>>>>>>>>
  - No specific area data presently available
  - Separate requirement for tools to explore different policy options
- **AFOLU**
  - Technical issue only to rationalise reporting of “Agriculture” and “Land Use, Land Use Change & Forestry” Sectors
  - Collaboration between AEAT, CEH & North Wyke
- **Post 2012**
  - Wait to see!

- **Climate Change Delivery Plan (Climate Change group)**
  - **Primary Land Use options**
    - More afforestation
    - Protect high carbon soils
  - **More detailed options**
    - Woodlands & forests
      - Expand forests
      - Modified forest management
    - High carbon soils
      - Protect peatland & high carbon soils
      - Protect semi-natural land
      - Manage wetlands
    - Other
      - Better management of muirburn
      - Reduced tillage
- **Mitigating Against Climate Change in Scotland Report (Climate Change group funded)**
  - **High Priority Options**
    - Woodlands & forests
      - Increase forest area
      - Extend forest rotation
    - Agricultural land
      - Convert cropland to grassland
      - Convert leys to permanent grassland
      - Improve grassland management
  - **Other Options**
    - 3 Medium Priority Options
    - 2 Low Priority Options
    - 3 Very Low Priority Options
    - 6 Options for forest & hedge expansion
- **Farm Based Carbon Accounting Tool (Rural & Environment Research Analysis Directorate)**
  - **Farming for a Better Climate**
    - Protect peatland and moorland from damage by avoiding ploughing, drainage and over grazing
    - Control soil erosion
    - Create wildlife corridors
    - Conserve semi-natural grasslands
    - Protect and restore wetlands
    - Manage existing woodlands on farm and create new ones
    - Consider reduced tillage on suitable land and ploughing in stubble and other crop residues

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- KP Reporting
  - Decision on scale: DA or 20x20km
- Domestic Targets
  - Clarification of DA/UK requirements for tracking/projecting “new” activities outside of UNFCCC needs
  - Identification/collection of appropriate area data by DAs/UK for these activities
  - Development of Emission/Removal Functions for these activities