



Department  
for Environment  
Food & Rural Affairs

# Agricultural Emissions Reporting

Scope, current estimates and supporting R&D

Dr. Luke Spadavecchia – Agricultural GHG R&D Platform Coordinator

# Why Compile an Inventory?

- International reporting:

Kyoto Protocol: The EU ratified the protocol on 31 May 2002 and it entered into force in 2005. The UK must submit annual reports to the UNFCCC under the protocol.

- National reporting Requirements:

Climate Change Act: Enacted 26 November 2008. The UK must achieve an 80% emissions reduction by 2050.

# Structure of the UK Inventory



- The inventory complies to a structure required by the UNFCCC under IPCC good practice guidance.
- Emissions sources are proscribed, with clear guidance on how emissions should be estimated.
- Countries can derive their own methodologies, but these must be approved by expert reviewers. Three tiers of complexity are permitted
  - **Tier 1** – IPCC methodology with internationally derived emissions factors
  - **Tier 2** – IPCC methodology with country specific emissions factors
  - **Tier 3** – Country specific methodology/model

# Structure of the UK Inventory

Emissions are reported for the following sectors – prescribed by the IPCC:

1. Energy (*farm fuel and energy*)
2. Industrial Processes
3. Solvents and Chemical Products
4. Agriculture  
(*non-CO<sub>2</sub> emissions from livestock and fertiliser use*)
5. Land Use, Land Use Change and Forestry  
(*land management and land use change*)
6. Waste

# Scope of agricultural emissions

- So, according to the IPCC, agricultural emissions include:

- Emissions of nitrous oxide from fertilisers and manures
- Emissions of methane from manure management
- Emissions of methane from ruminant livestock



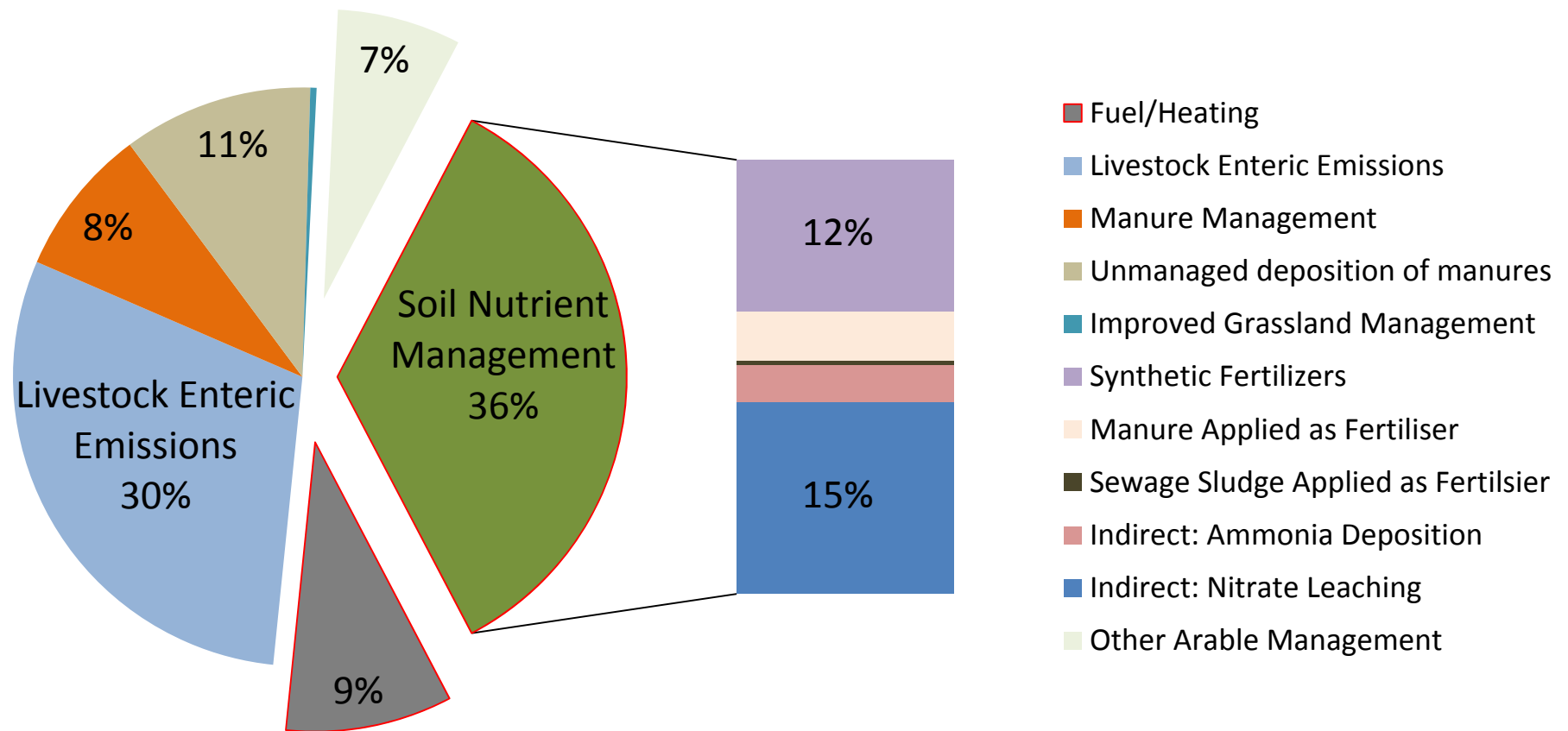
- But exclude:

- Emissions from tractors, heating and cooling on farm
- Emissions or sequestration of soil carbon after cultivation
- *These are captured in other sectors*



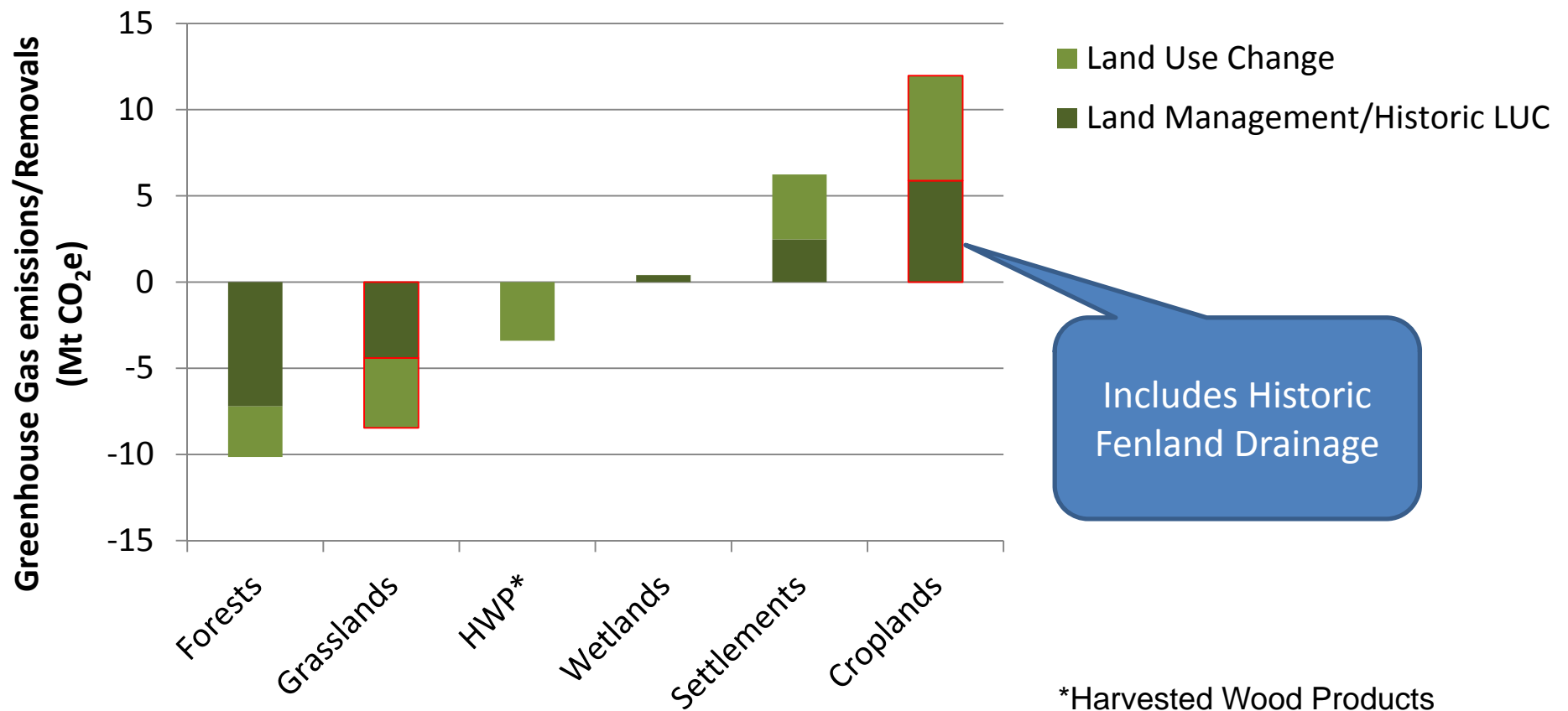
# UK Agricultural GHG Emissions By Source: 2011

Agriculture contributes slightly less than 10% of total UK emissions

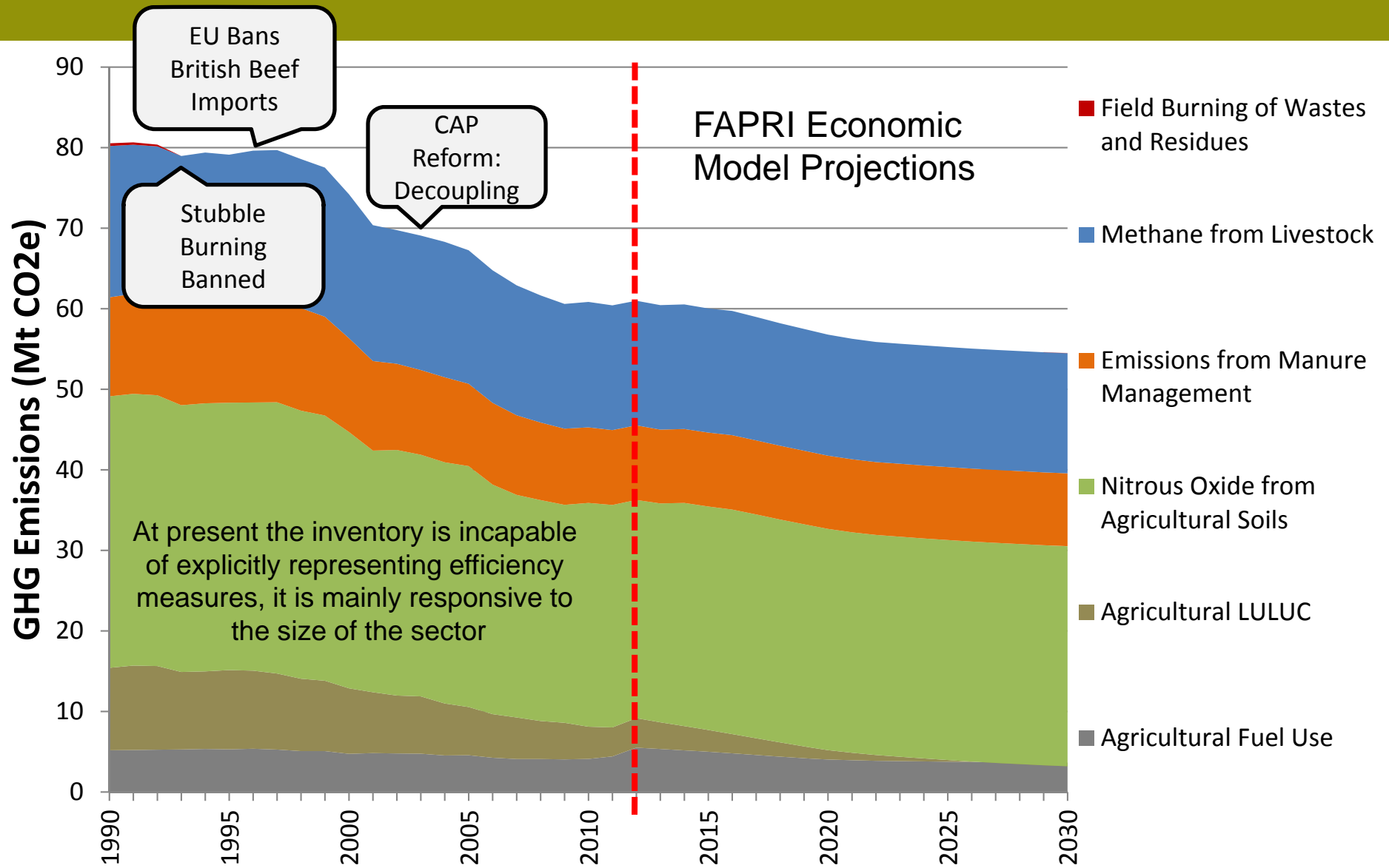


# UK LULUCF Emissions By Source: 2011

- LULUCF is a small net carbon sink (3.4 Mt), but there are significant sources of emissions, notably from croplands
- Agriculture is a net LULUCF source of 3.5 Mt CO<sub>2</sub>e. This represents about 1% of UK emissions

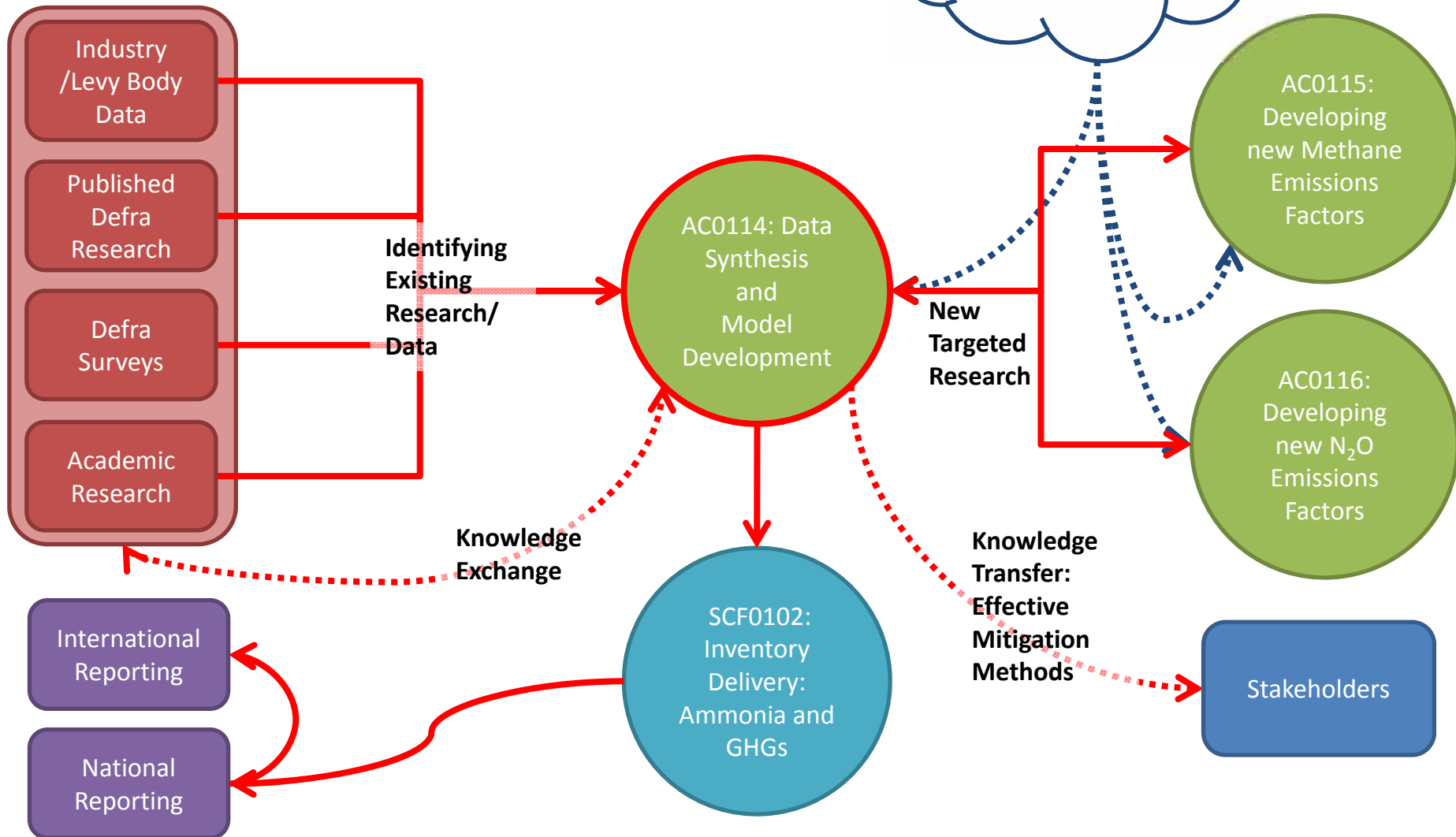


# UK Agricultural GHG Emissions by Source Over Time





# Inventory Improvement Programme

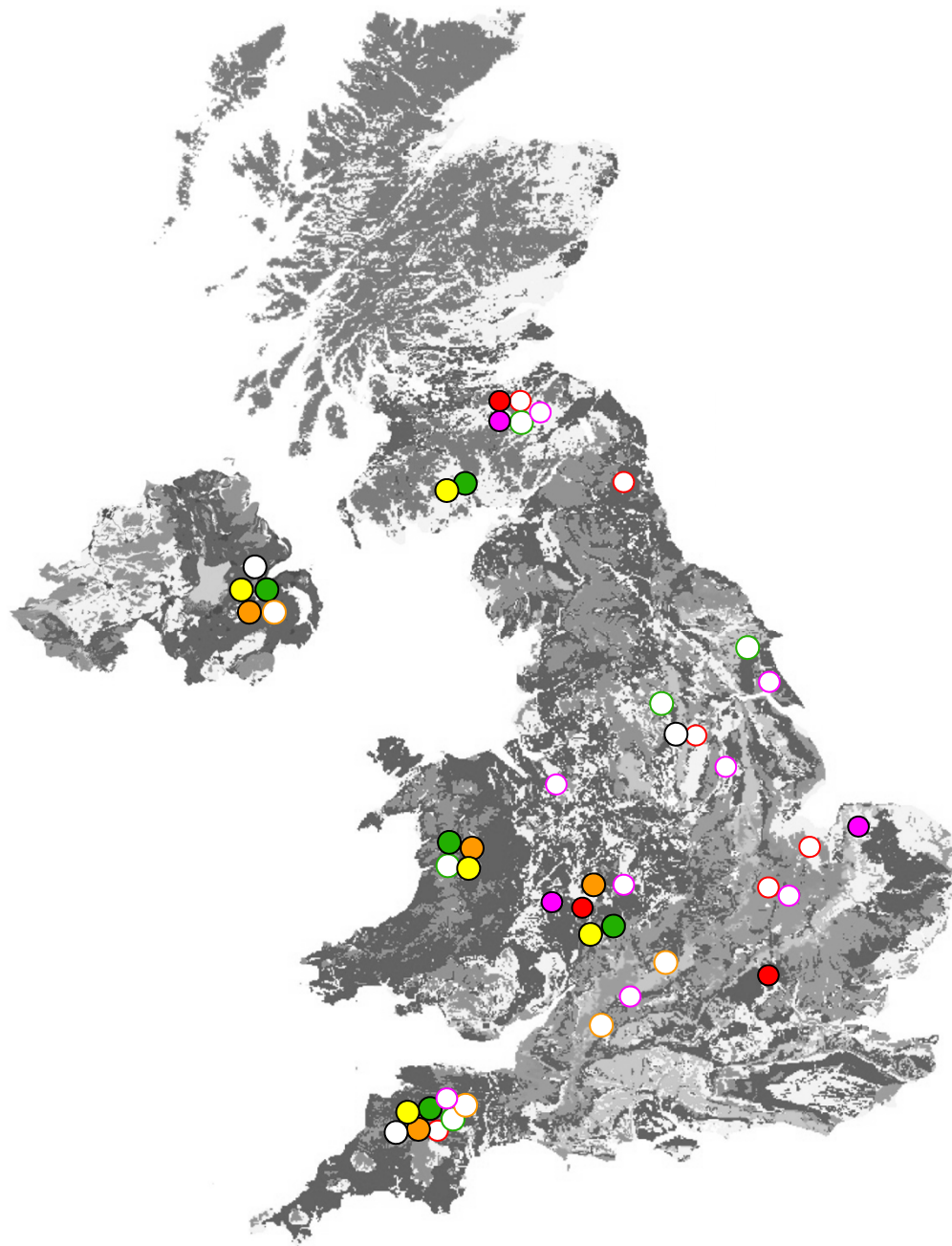


# Methane Emission Factors Project



# Nitrous Oxide Emission Factors Project





- New fertiliser to tillage site
- Existing fertiliser to tillage site
- New fertiliser to grass site
- Existing fertiliser to grass site
- New manure to tillage site
- Existing manure to tillage site
- New manure to grass site
- Existing manure to grass site
- New urine/dung to grass site
- Existing urine/dung to grass site

### Cross Compliance Soils

- Chalk and limestone
- Heavy
- Medium
- Peaty
- Sandy and light

# Greenhouse Gas Emissions and Feedback programme

- Unique opportunity to link our extensive network of measurements to novel up-scaling and modelling approaches via GREENHOUSE
- Offers an independent check of our improved inventory model via GUAGE

**Questions?**