

# Fertiliser N Stakeholder Meeting



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**DEPARTMENT OF AGRICULTURE, FOOD  
AND THE MARINE**

**31<sup>ST</sup> MAY 2017**

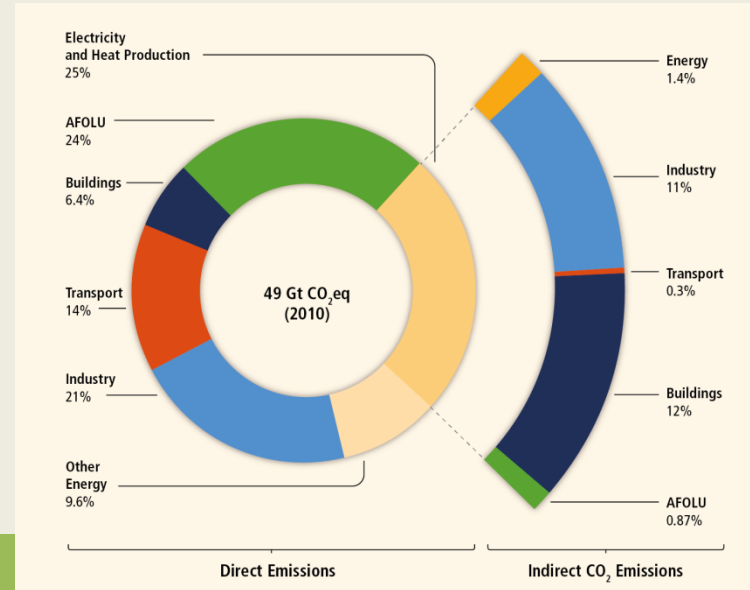
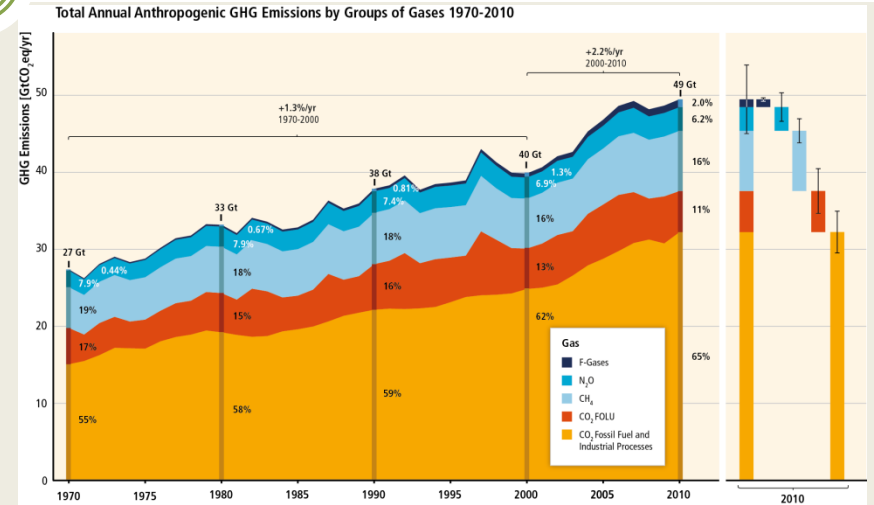
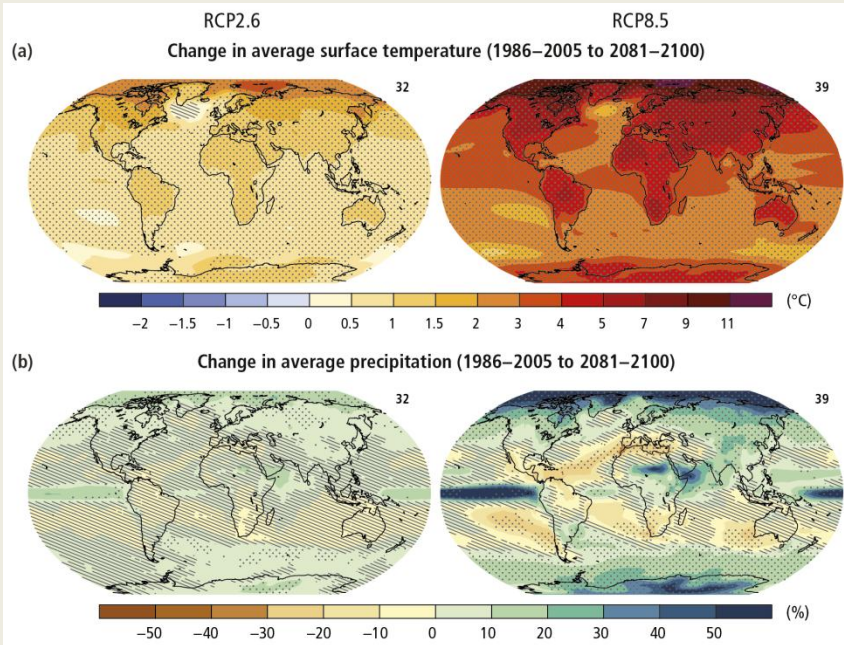


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An Roinn  
**Talmhaíochta,  
Bia agus Mara**

# Climate change proven by science : IPCC (2013)


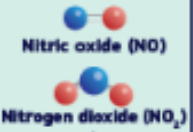



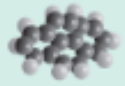
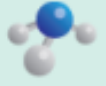



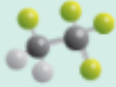
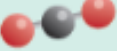
2



# Air Pollution

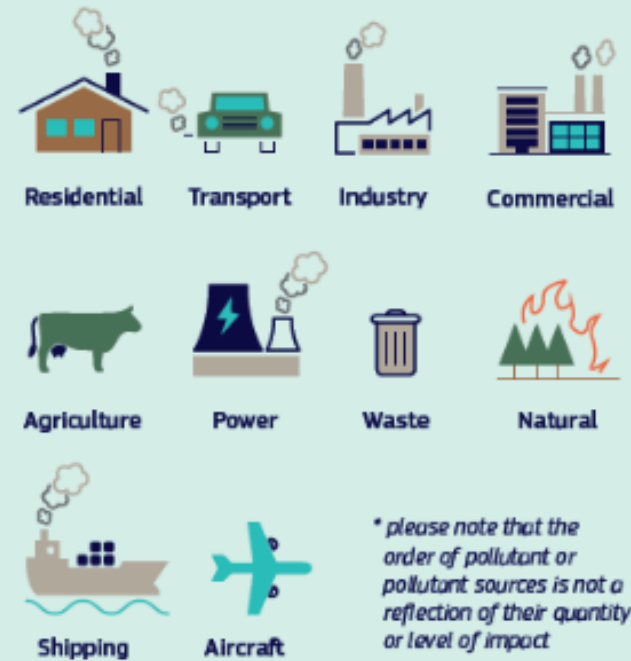


## MAJOR AIR POLLUTANTS

 <b>PM</b> Particulate Matter	 Nitric oxide (NO) Nitrogen dioxide (NO <sub>2</sub> ) Oxides of Nitrogen - NO <sub>x</sub>	 <b>SO<sub>2</sub></b> Sulphur Dioxide	 <b>O<sub>3</sub></b> Ozone
 <b>VOC</b> Volatile Organic Compounds	 <b>PAHs</b> Polycyclic Aromatic Hydrocarbons	 <b>NH<sub>3</sub></b> Ammonia	 <b>CO</b> Carbon Monoxide
 <b>CH<sub>4</sub></b> Methane	 <b>N<sub>2</sub>O</b> Nitrous Oxide	 <b>HFCs</b> Hydrofluorocarbons	 <b>CO<sub>2</sub></b> Carbon Dioxide

▲ Greenhouse gases (GHGs)

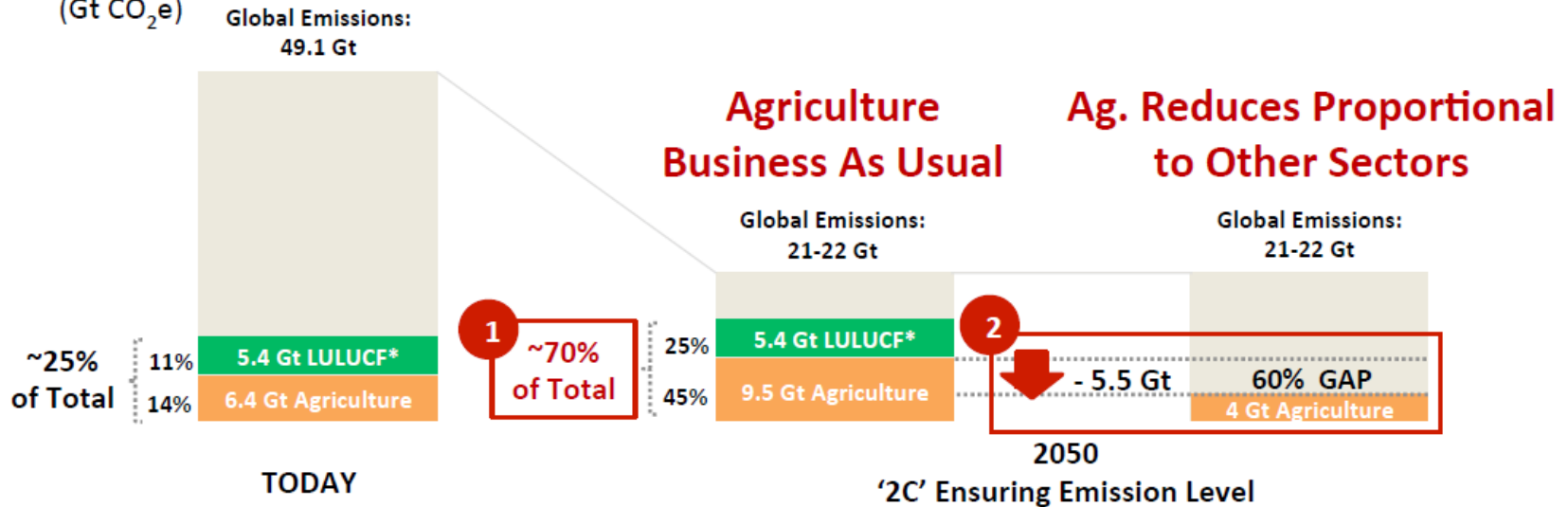
## KEY AIR POLLUTANT SOURCES



# Future Emissions from Agriculture

Projections of Global, Agriculture and Land Use Change Related Emissions towards 2050

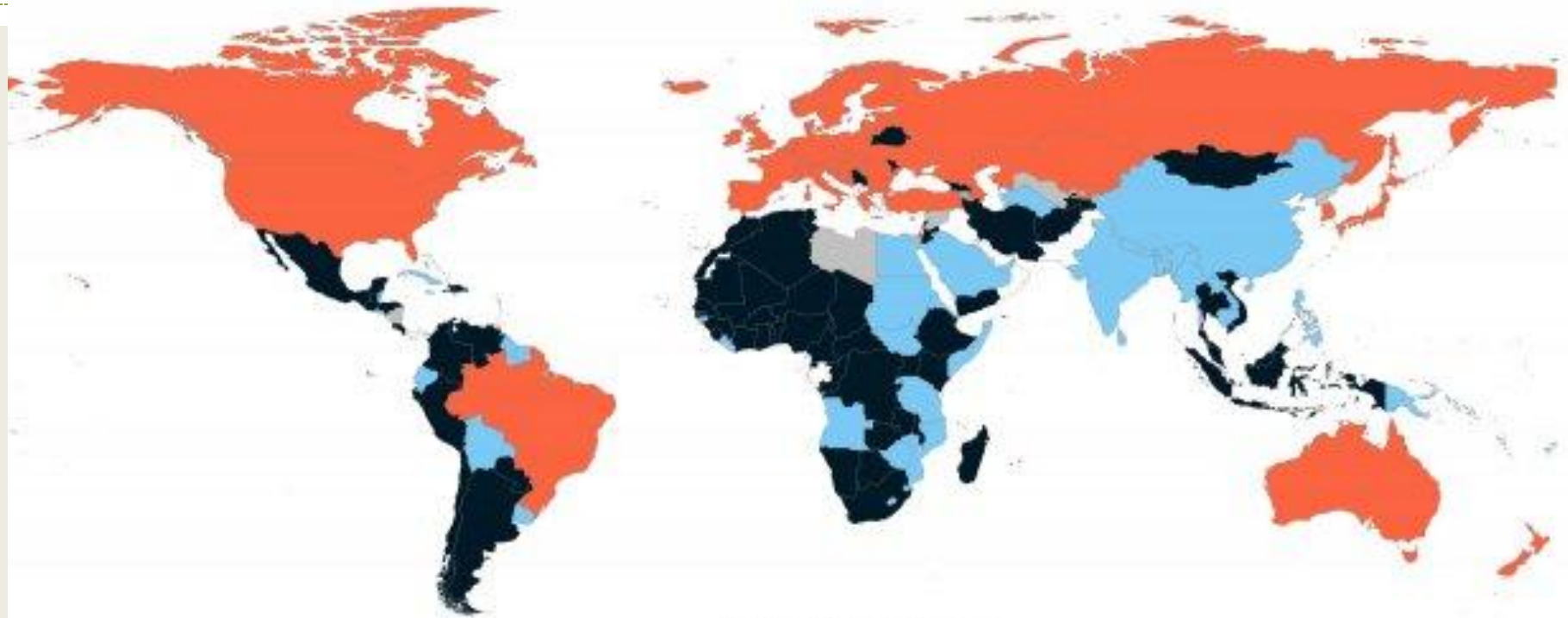
(Gt CO<sub>2</sub>e)



**1** By 2050, Agriculture and Land Use Change could represent 70% of Global Emissions - if global emissions are reduced in accordance with a 2C goal, while Agriculture were to remain in business as usual.

**2** By 2050, Agriculture will therefore have to reduce its emission intensity by 60%, if it is to maintain its footprint in parallel with overall emissions reductions. This already assumes emissions from Land Use Change will have fallen to zero.

# Agriculture in the INDCs



**Agriculture in the INDCs**

- Mitigation target and adaptation priorities include agriculture
- Mitigation target includes agriculture
- Adaptation priorities include agriculture
- No agriculture in INDC
- No INDC



CGIAR Research  
Climate Change,  
Agriculture and  
Food Security

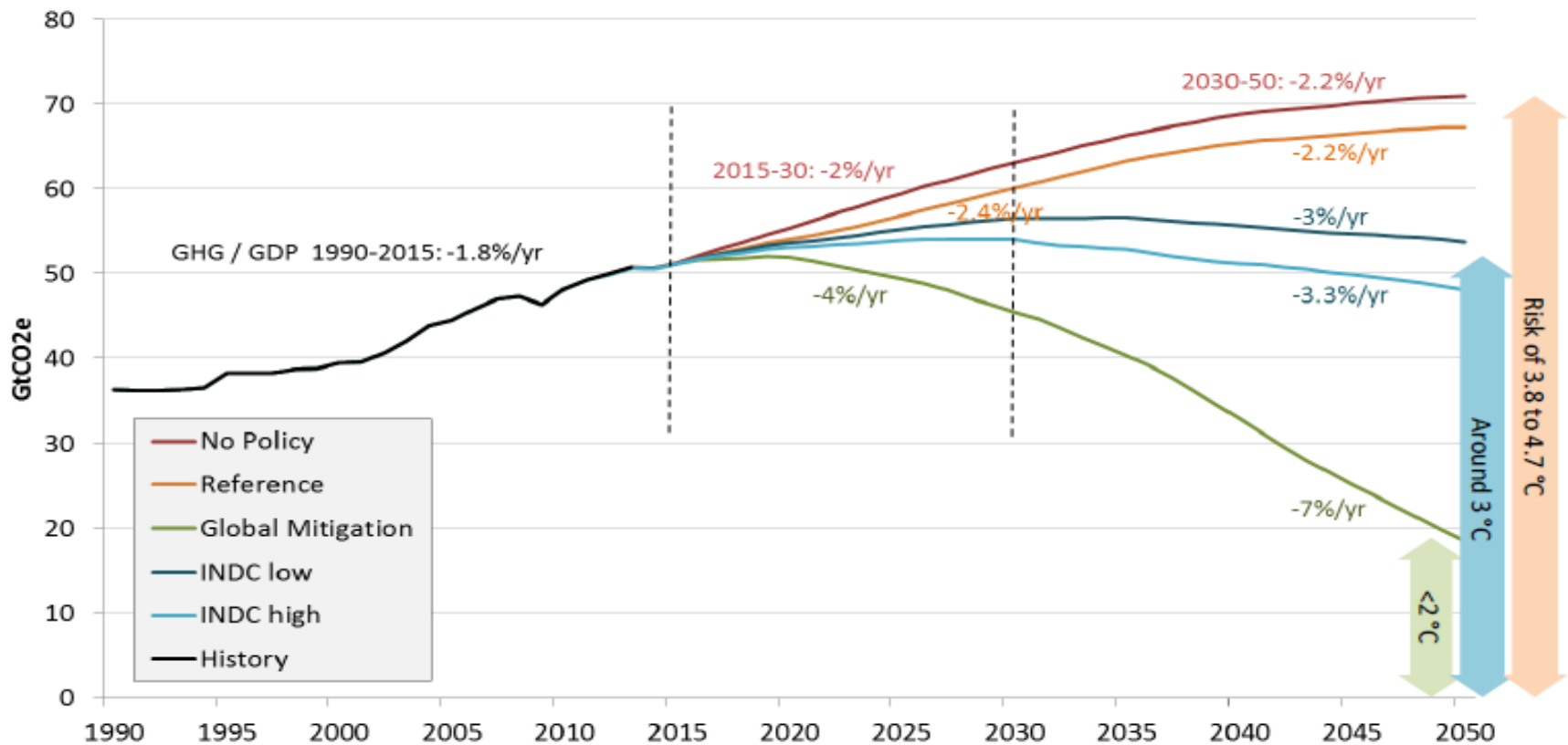


April 28, 2016

Richards M, Bruun TB, Campbell B, Gregersen LE, Hoyer S, Kuntze V, Madsen STN, Otdvig MB, Vasilekou I. 2016. How countries plan to address agricultural adaptation and mitigation: An analysis of Intended Nationally Determined Contributions. CCAFS dataset version 1.1. Copenhagen, Denmark: CGIAR Research

# Impact of the INDC on global emissions

(GtCO<sub>2e</sub>, total excluding sinks) and percent change in emission intensity per unit of GDP



Source: POLES – JRC Model

# EU 2030 climate & energy framework

**$\leq -40$  % Greenhouse Gas Emissions (domestic)  
(vs 1990)**

**ETS**

**-43 %**

*Including:  
Power/Energy Sector  
and Industry,  
Aviation*

Max 100  
MtCO<sub>2</sub>eq

**Non-ETS  $\leq -30$  %**

**Effort Sharing  
Decision**

**(ESD): road  
transport,  
buildings, waste,  
agriculture**

**-30 %**

Full  
flexibility

Max 280  
MtCO<sub>2</sub>eq

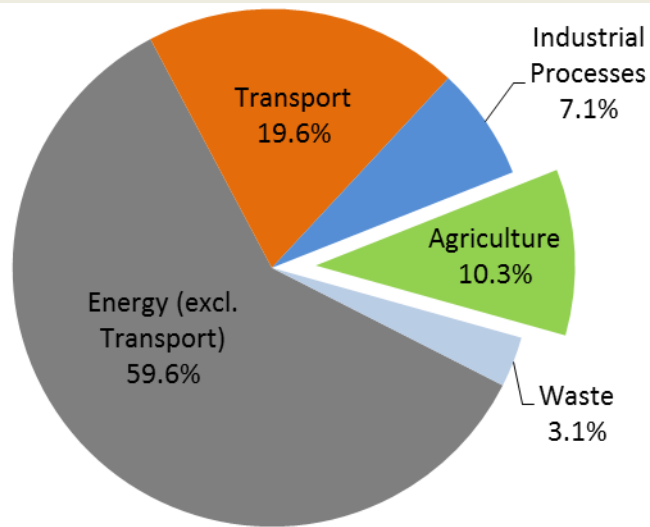
**LULUCF**

**$\leq 0$  %**

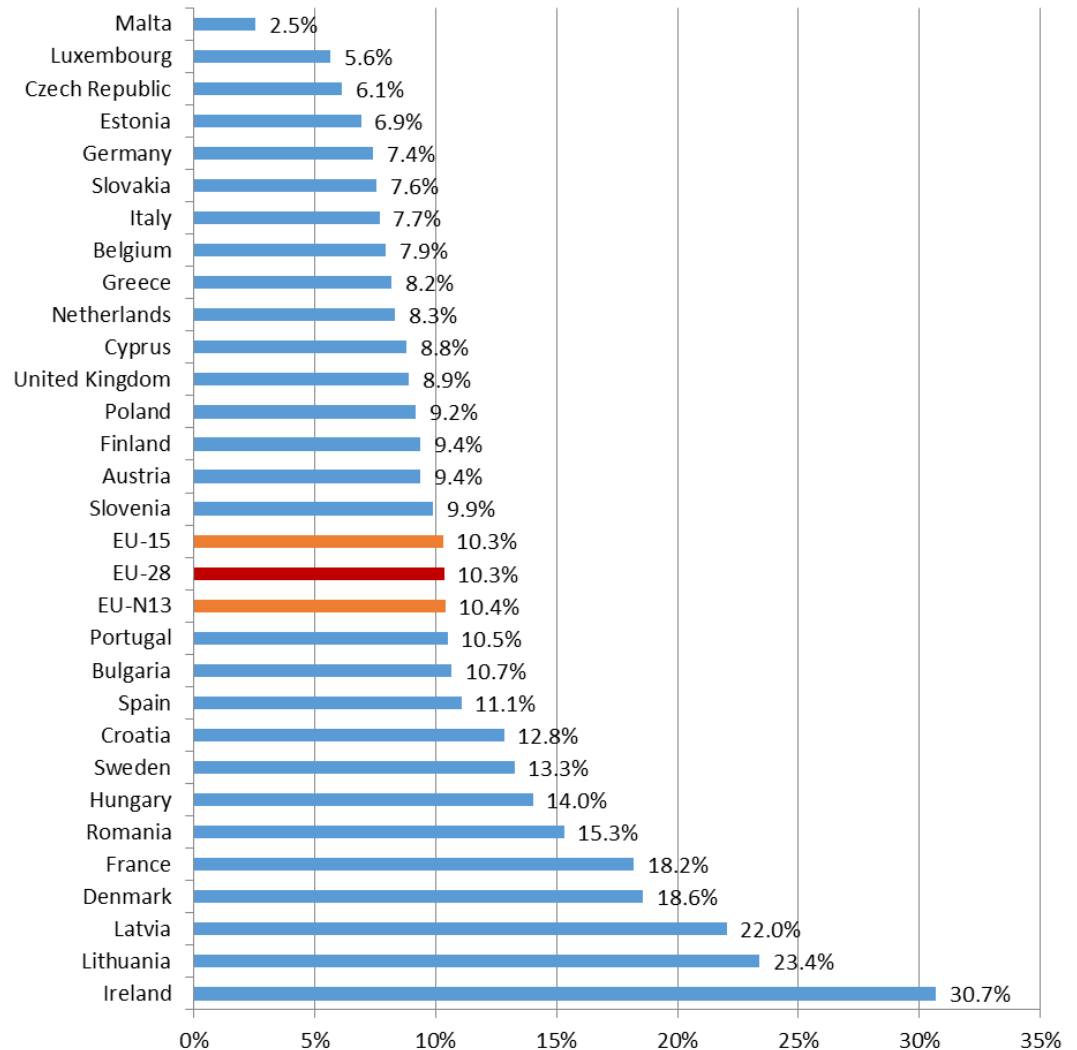
**"No-Debit"**

# Agricultural emissions in the EU

**How important are agriculture (non-CO<sub>2</sub>) emissions in the EU?**



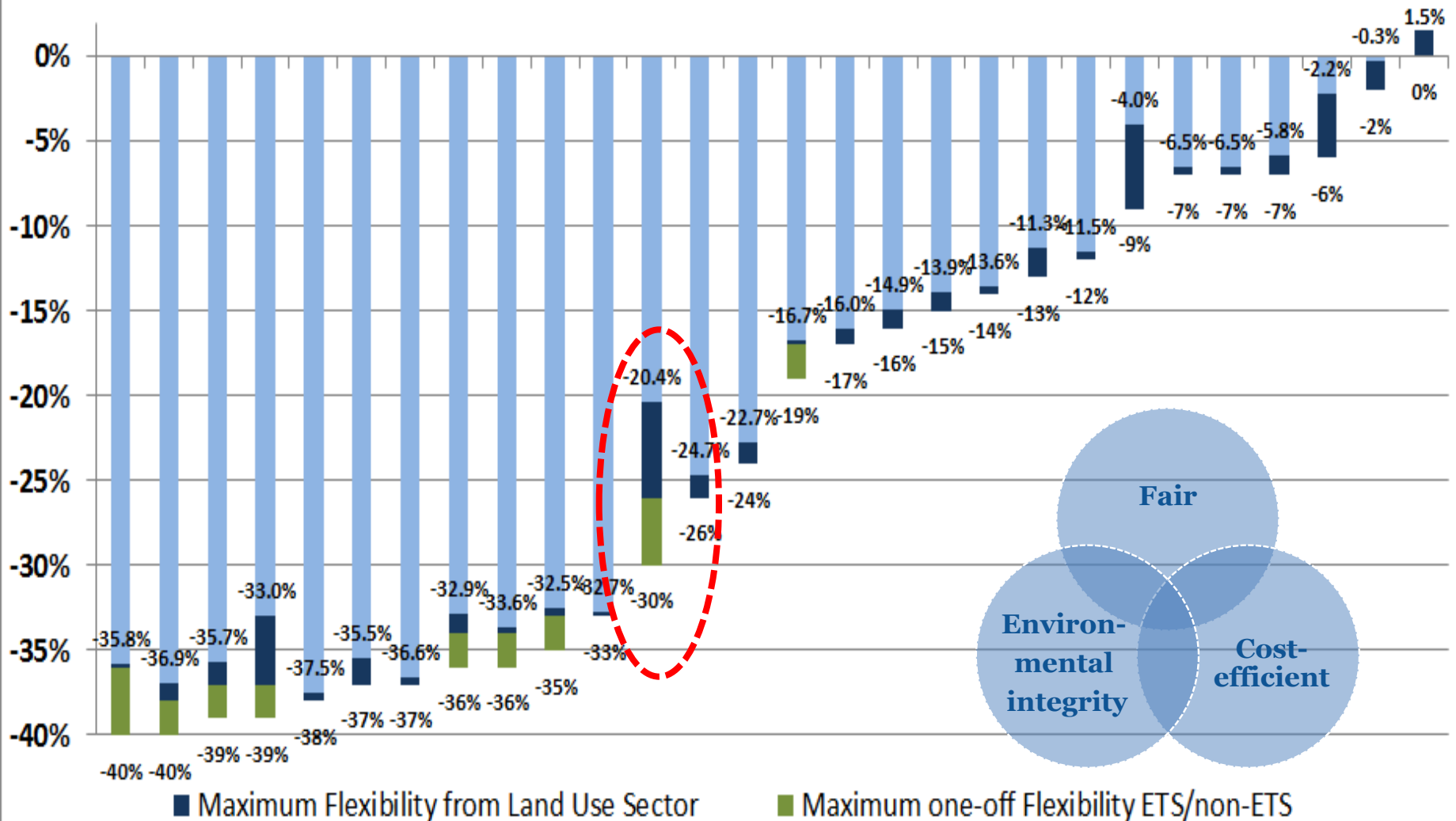
Source: EU GHG Inventory 2016 (EEA, 2016)





# ESR targets and maximum one-off ETS/non-ETS and land use flexibilities

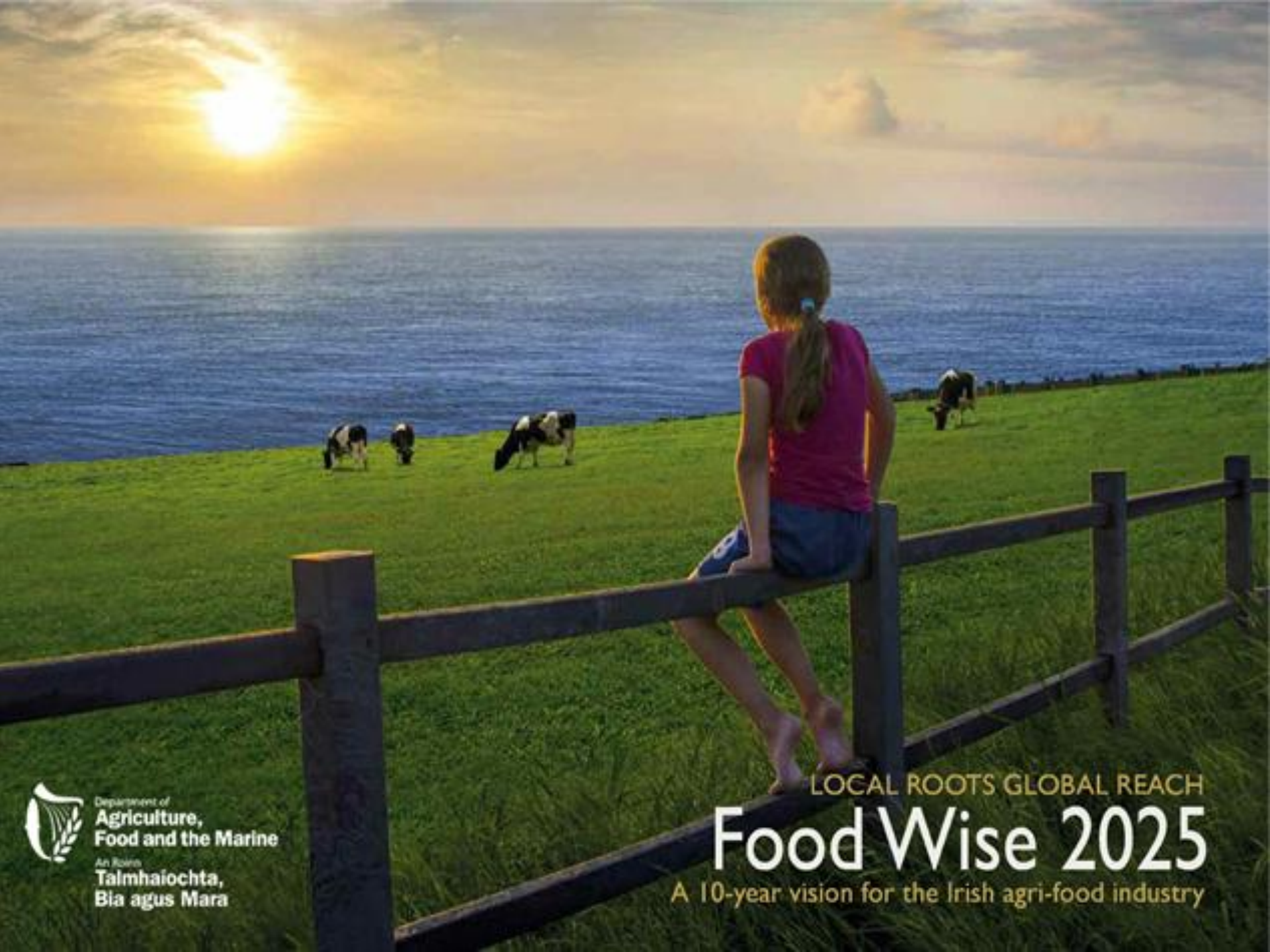
LU SE FI DK DE FR UK NL AT BE IT IE ES CY MT PT EL SI CZ EE SK LT HR HU PL LV RO BG



# Challenges



- National Climate act
  - National & Sectoral plan in preparation
- EU
  - Critical negotiations on burden sharing between Irish Government and Commission
  - Ireland as an early test for other Member States with agriculture's significance in non-ETS growing
  - NECD amended 2016
- International
  - Post-Paris, re-evaluating the role of agriculture in climate policy
  - EU policy position on the role Agriculture in COP23
    - ✦ Irish engagement – GACSA, GRA, JPI etc
  - Gothenburg Protocol to be ratified



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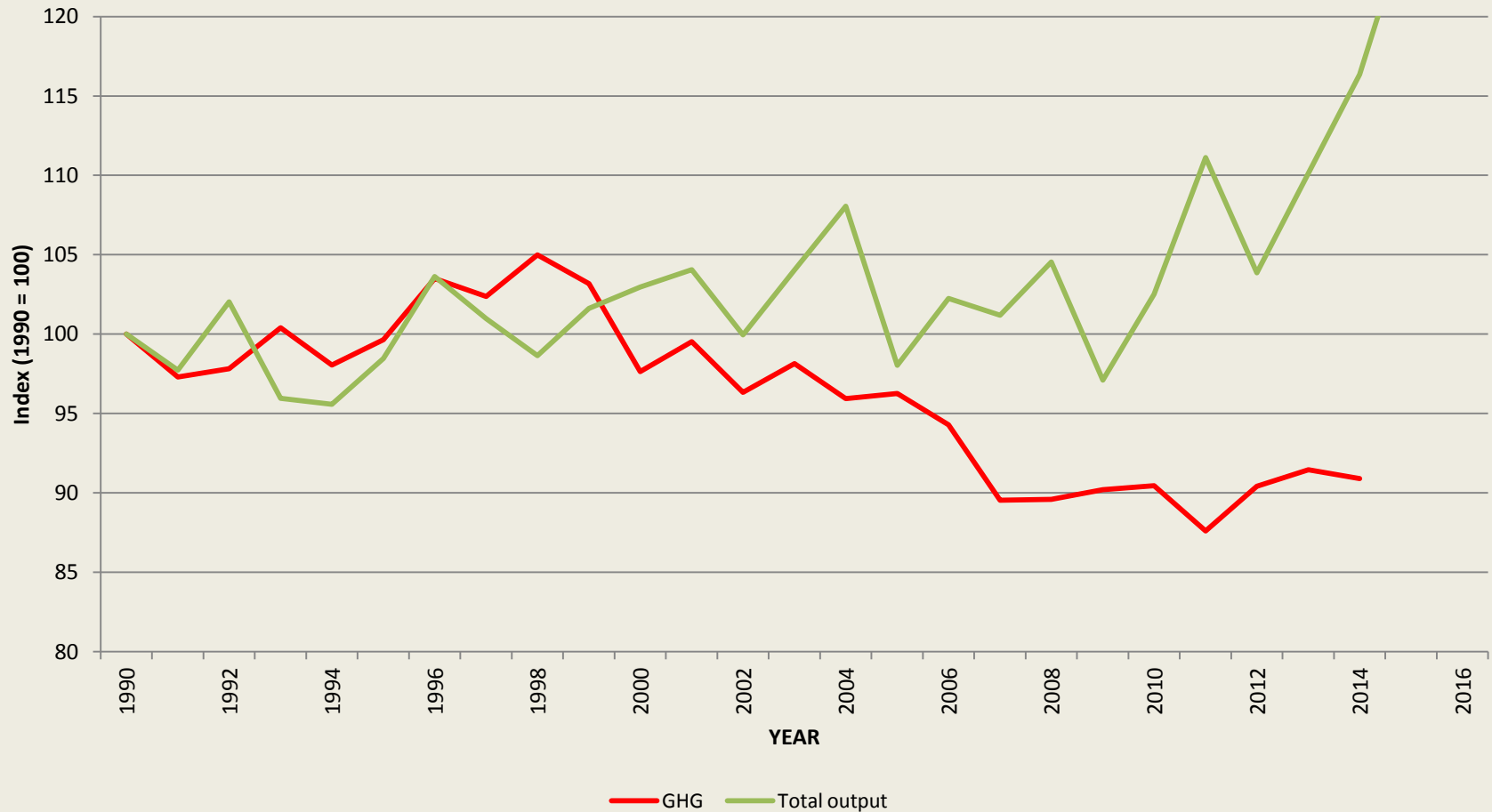
LOCAL ROOTS GLOBAL REACH  
**Food Wise 2025**  
A 10-year vision for the Irish agri-food industry

# Sustainability

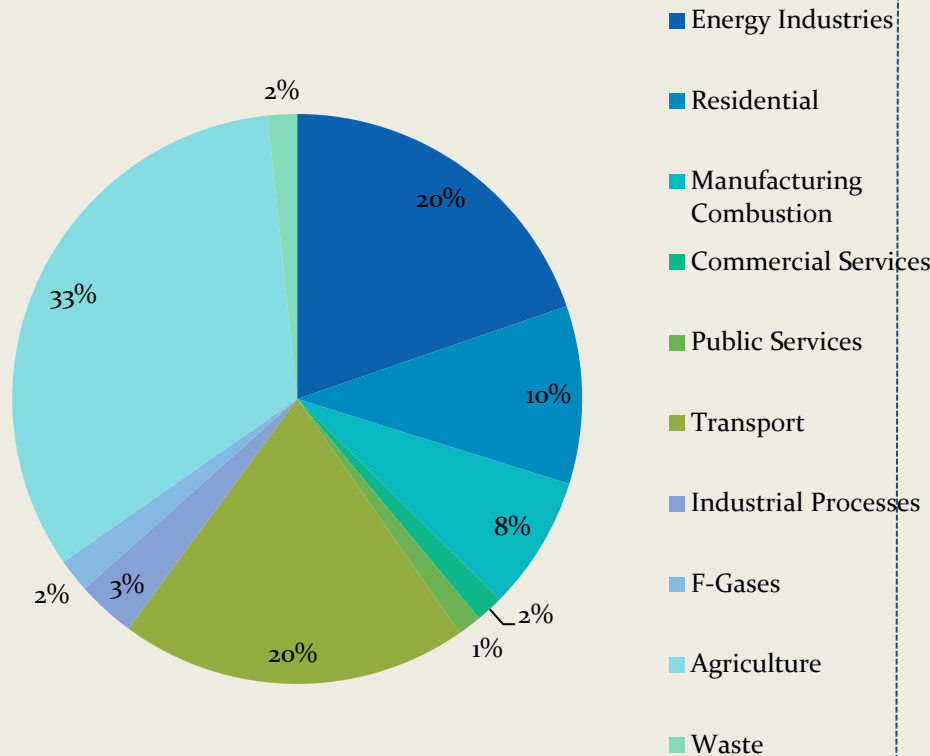


- Chapter 4: Sustainability - acknowledgement of significant challenges including improvement of water quality while increasing production
  - 8 high-level recommendations - 79 enabling actions
  - Number of actions aimed at improving environmental footprint – reduce impact and improve water quality
  - RDP measures –
    - ✦ trailing shoe
    - ✦ AECM
    - ✦ Beef genomics
    - ✦ Knowledge Transfer

# Trends in GHG emissions arising from agriculture and total agriculture output (1990- 2014)



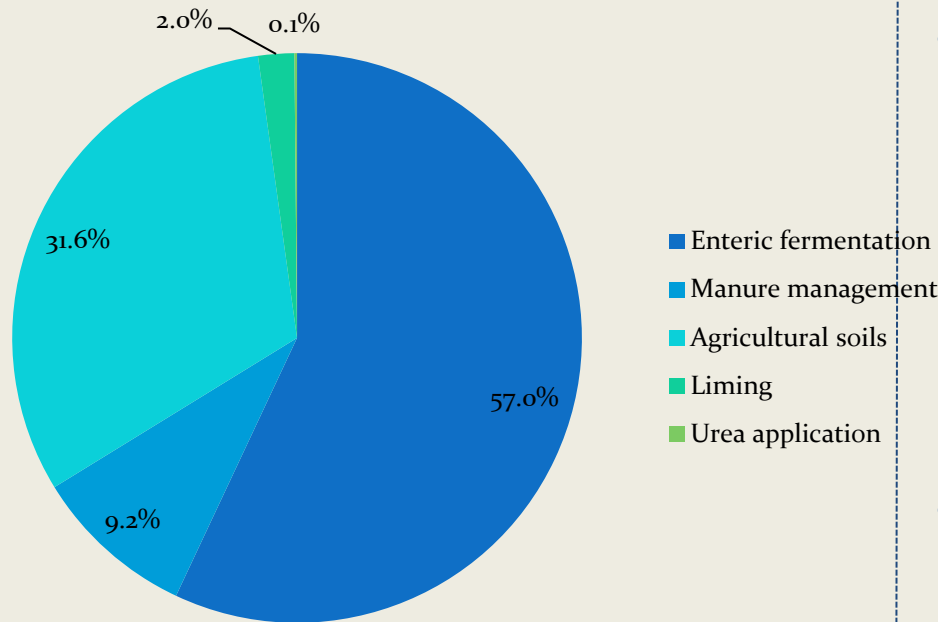
# National Emissions in 2015



- As a sector, agriculture is the **highest emitter** of greenhouse gases in Ireland
- This equates to **approx. 33%** of national emissions
- The EPA projects agricultural emissions to increase by 4-5% in the period 2015 to 2020, falling back to 1% to 2030

Source: EPA (2017) IRELAND'S GREENHOUSE GAS EMISSIONS IN 2015

# Sources of agricultural GHG emissions\* 1990 to 2015 (\*excluding combustion CO<sub>2</sub>) (2015 provisional data from the EPA)

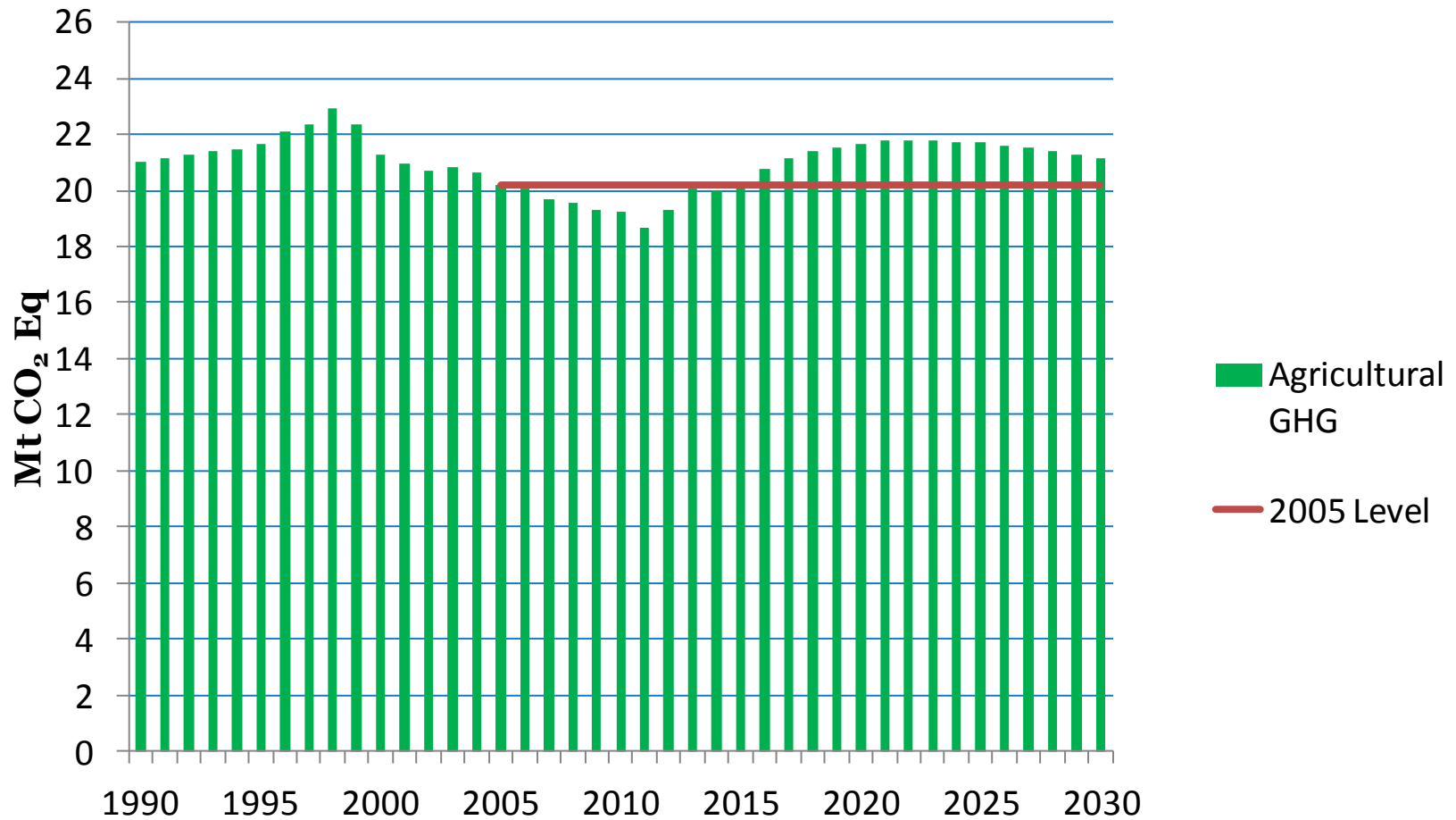


Source: EPA (2016) IRELAND'S  
PROVISIONAL GREENHOUSE GAS  
EMISSIONS IN 2015

Mainly from:

- Enteric fermentation (57%)
  - The breakdown of plant material in the gut of ruminant animals resulting in the emission of methane (CH<sub>4</sub>)
- Agricultural soils (31.6%)
  - From the application of animal manures and fertilisers

# Irish agricultural emissions projections: Baseline





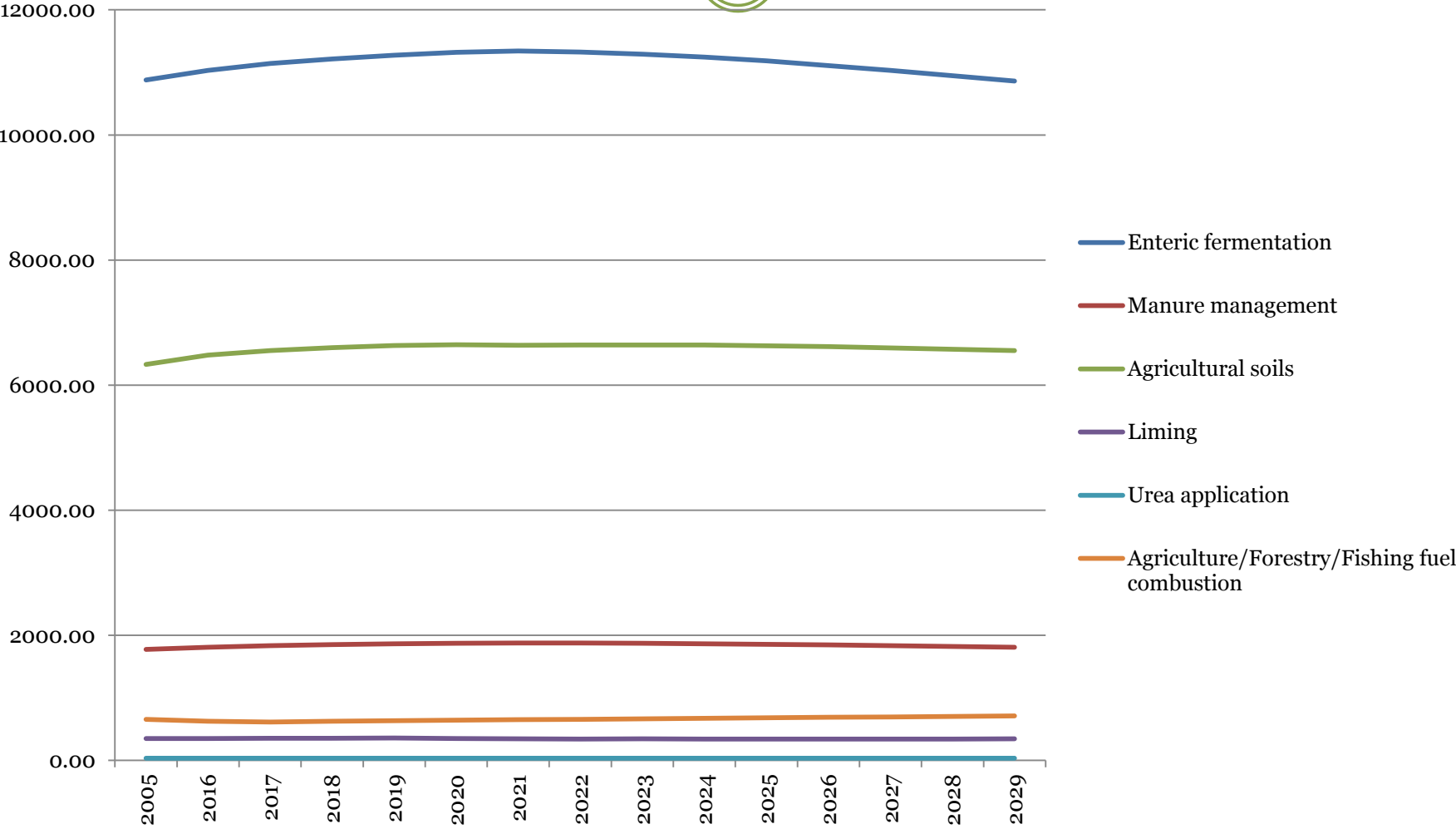
# What the proposed ESR means for Ireland



2021 – 2030 carbon budget	Carbon Budget (Mt)	Gap (Mt)
Required per EPA's <i>BAU Scenario</i>	456	-
39% Target	359	97
30% Target (reflecting 9% Cost-Effectiveness Adjustment)	383	73

Achieving 73mt abatement will require very substantial investment by both the public and private sectors, as well as a broad range of non-financial policy tools, including regulations, standards, education initiatives and targeted information campaigns.

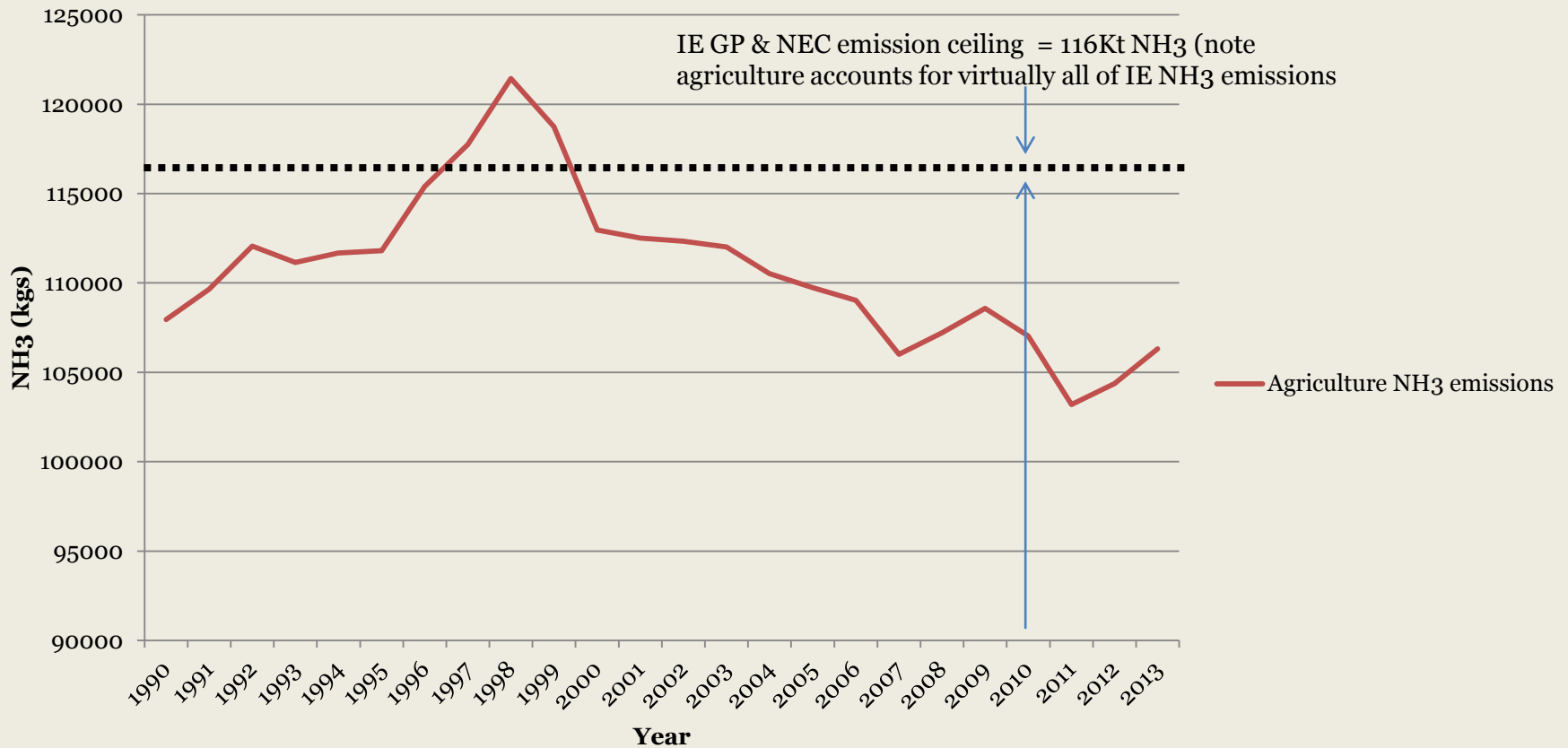
# Source of agri emissions



# Agriculture NH<sub>3</sub> emissions historic trend



## Agriculture NH<sub>3</sub> emissions



# What can farmers do to assist with emission reduction commitments?

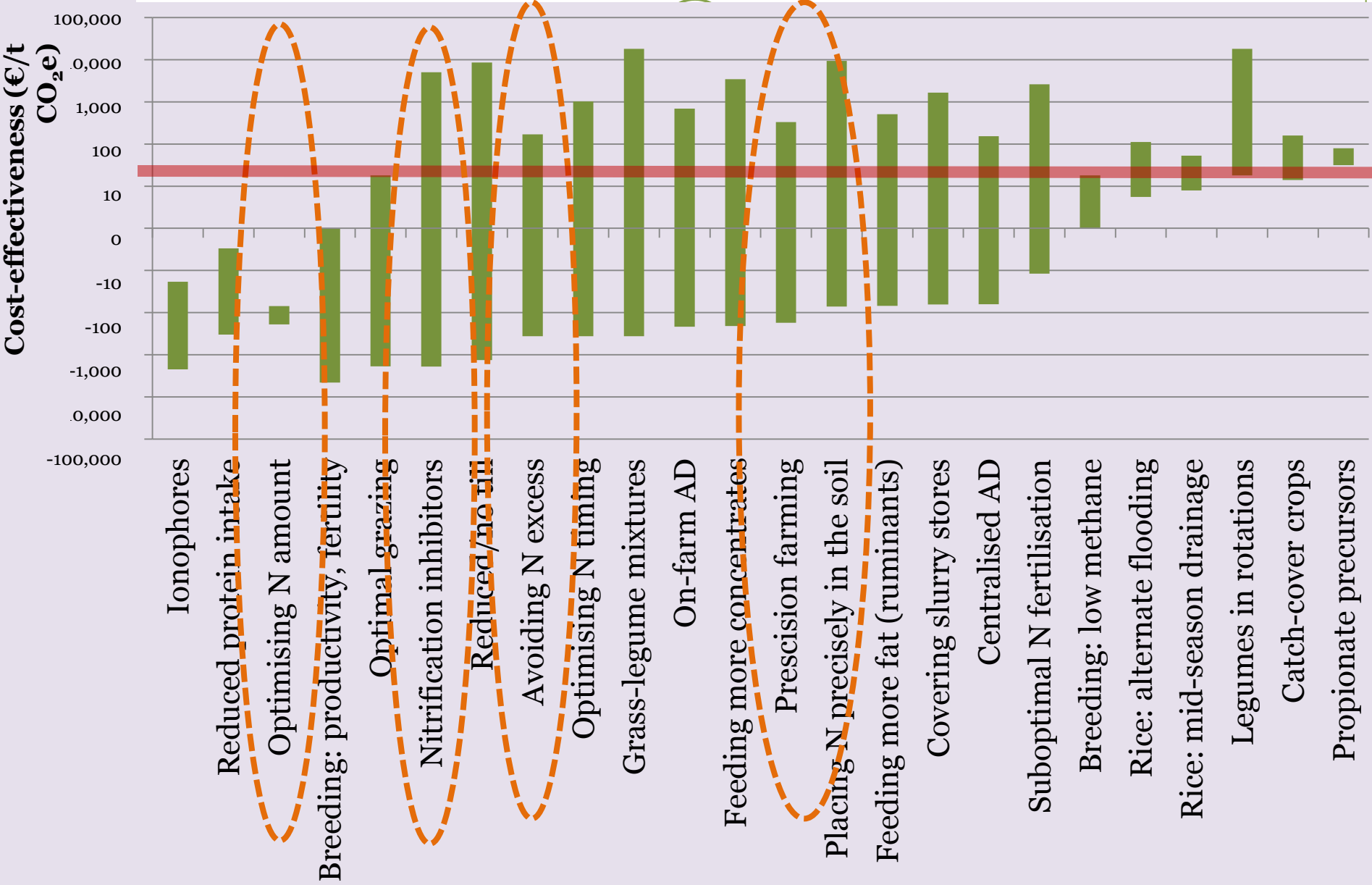
## Agriculture Inventory

- Animal management
  - Selective breeding & animal health, Feeding strategies
- Nutrient management
  - Soil fertility, Timing, Fertiliser formulations,
- Synergies with other environmental constraints

## LULUCF Inventory

- Managed Grassland
  - Drainage maintenance on mineral soils & reduced management intensity on peat soils
- Managed Cropland
  - Green cover
  - Straw incorporation
- Afforestation

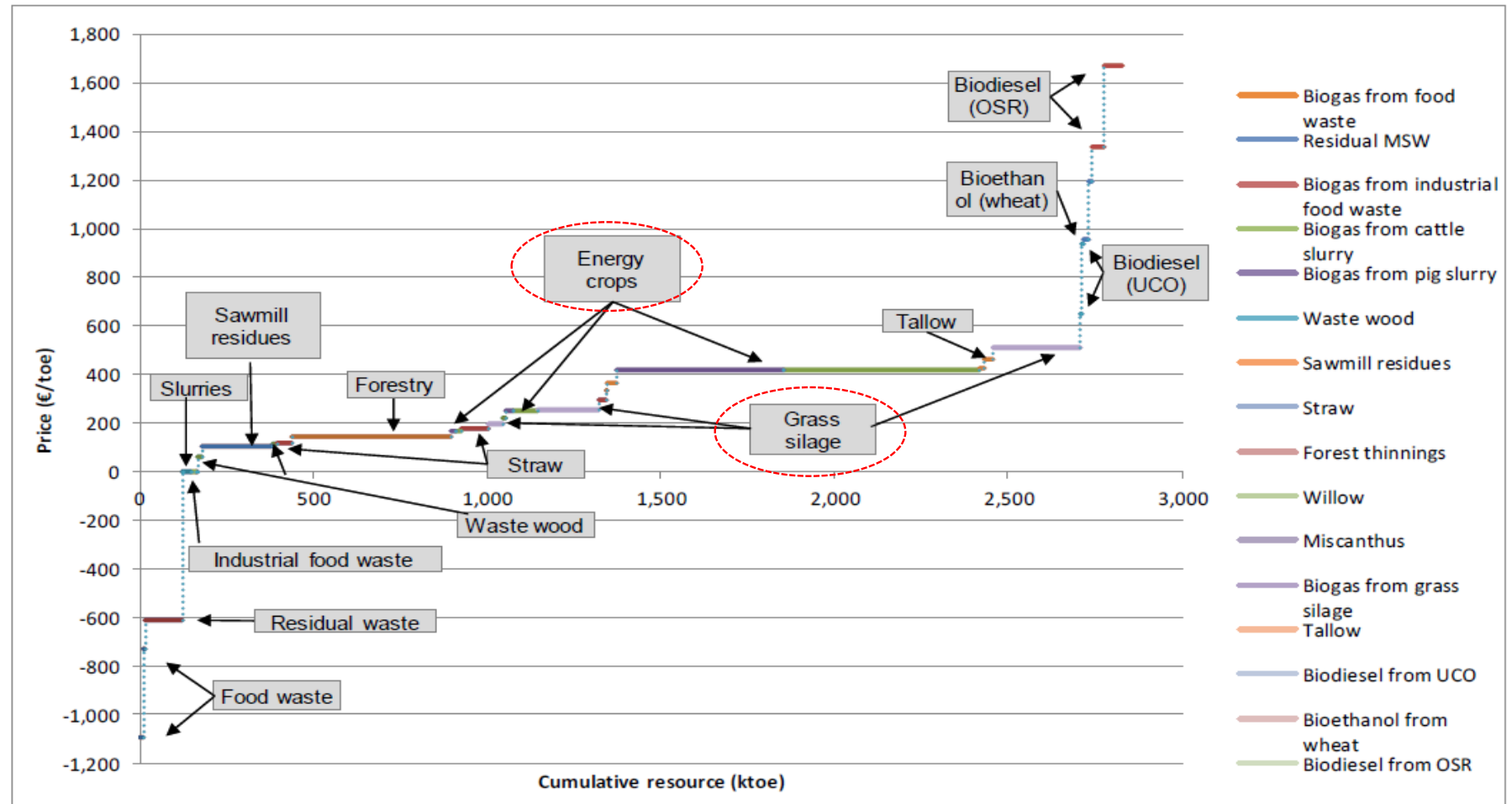
# OECD review of agri abatement options



# Biomass supply curves

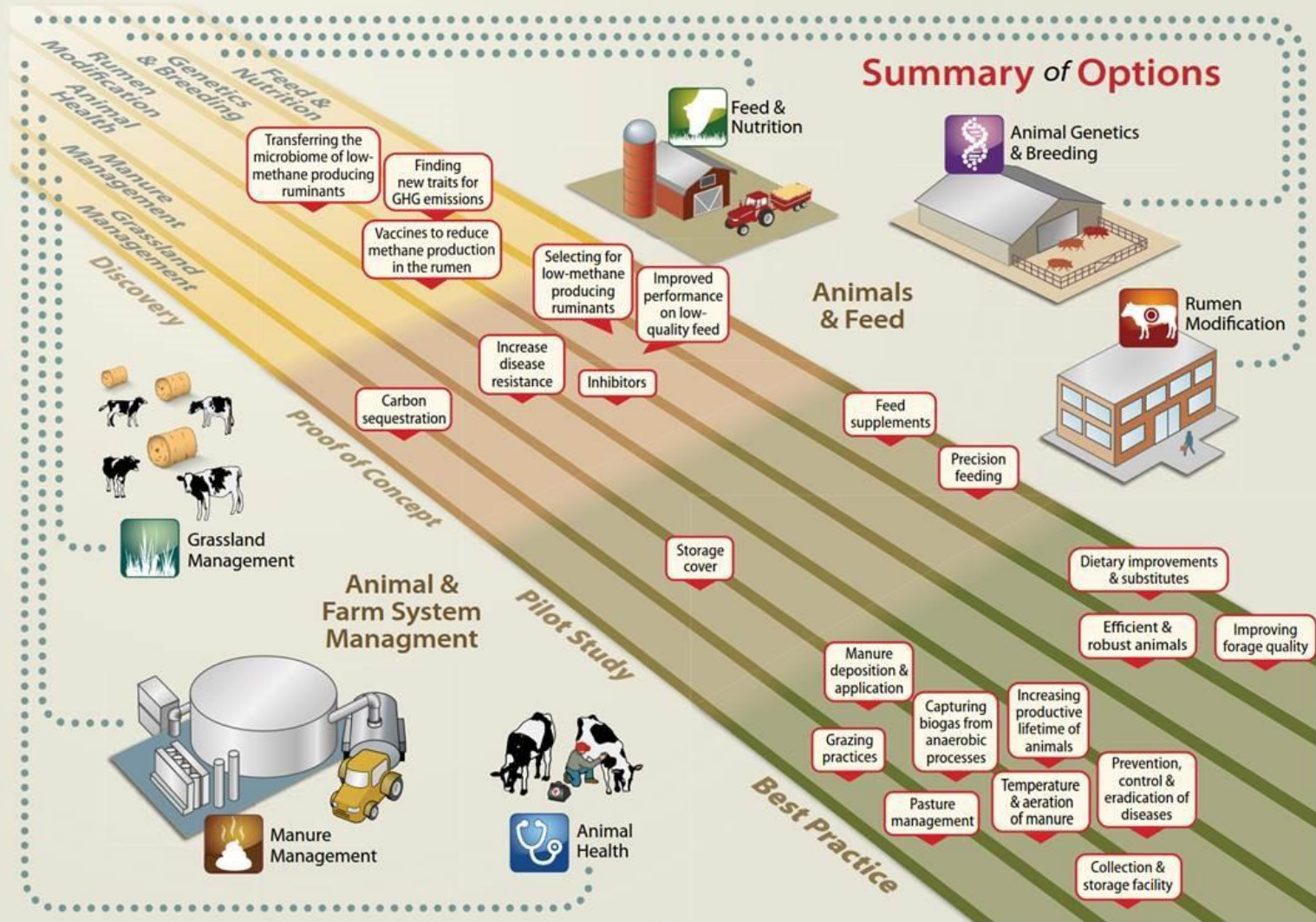


Figure E3 Bioenergy Cost Curve for 2035 (BAU scenario)



Note: For some resources, not all the resource is available at the same price, i.e. additional quantities may be available at higher prices, so the resource may appear up to three times on the cost curve

# Research and innovation



# Conclusions



- The unique role of agriculture & forestry in the global climate change response is increasingly recognized
- Ireland is at a Good starting point
  - National Mitigation Plan & Foodwise sustainability
  - Need to ensure KT allow sector to get better as well as bigger
- However Need to mobilise Action
  - To address evolving needs and MRV of progress
  - To drive knowledge transfer and innovation at farm level to
    - ✦ Deliver sustainable intensification & reduced emissions intensity
    - ✦ Sustainable land management