



**An Roinn Talmhaíochta,  
Bia agus Mara**  
Department of Agriculture,  
Food and the Marine

# Climate Change Policy

## Industry GHG Training Day

Philip Blackwell

Climate Change and Bioenergy Policy Division

# Overview



- Climate Change and Agriculture
- Ammonia
- Policy Overview
- Common Agricultural Policy Reform

# Climate Change & Greenhouse Gases



**Climate Change:** The change in global and regional climate patterns attributed to human emissions, particularly from burning fossil fuels and food production.

**Greenhouse Gases (GHG):** The compounds which contribute to the Greenhouse Effect whereby the sun's warmth is more easily trapped in the atmosphere.



# Greenhouse Warming

**CO<sub>2</sub>**  
Carbon Dioxide

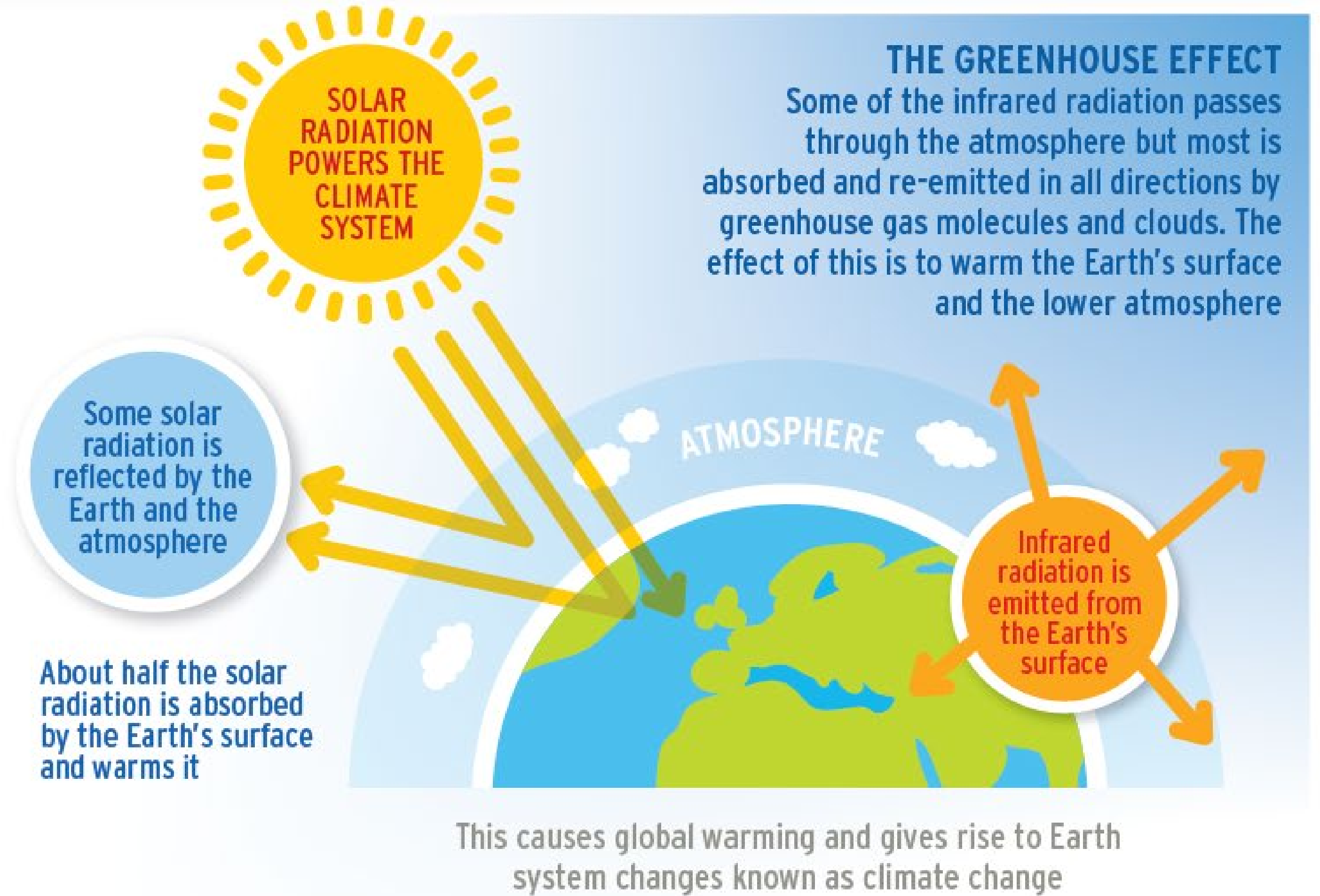
**CH<sub>4</sub>**  
Methane

**N<sub>2</sub>O**  
Nitrous Oxide

**HFC, PFC,  
SF<sub>6</sub> and NF<sub>3</sub>**  
Fluorinated Gases



Increased concentrations of heat-trapping greenhouse gases has increased the amount of energy being trapped in the climate system



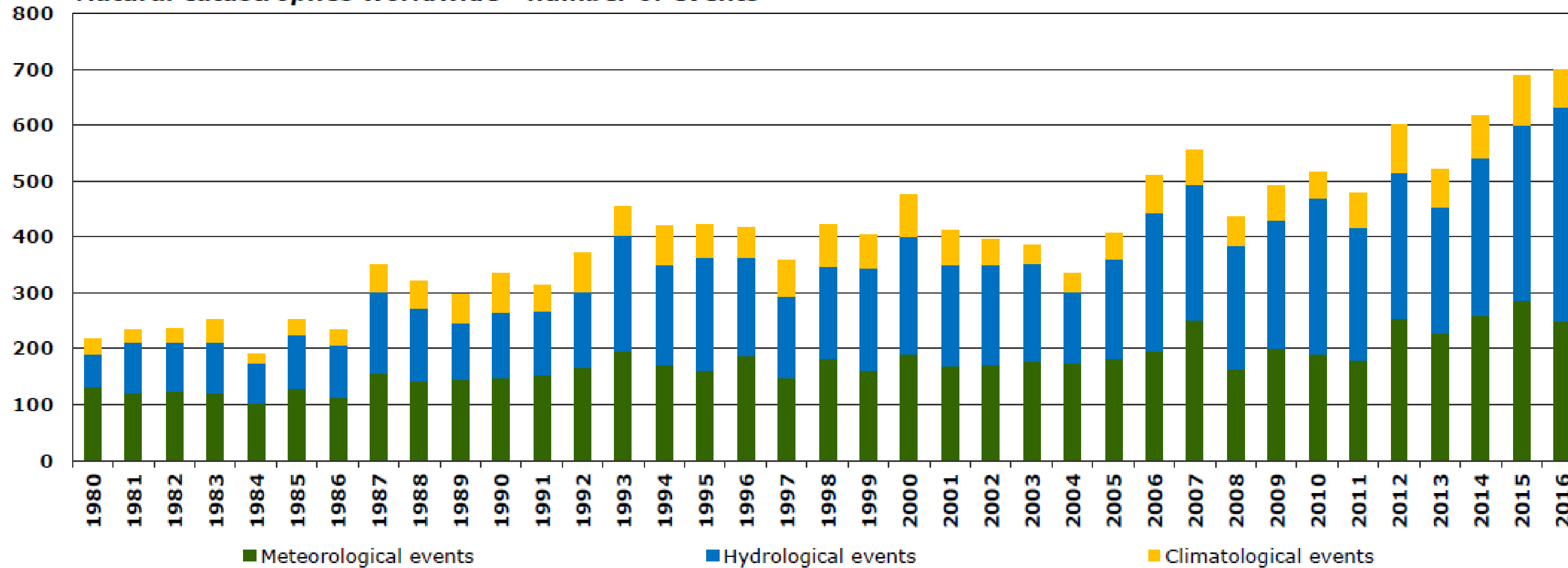
(Source: EPA 2019)



# WORLDWIDE EXTREME WEATHER EVENTS



*Natural catastrophes worldwide - number of events*



Meteorological events: Tropical storm, extra-tropical storm, convective storm, local storm  
Hydrological events: Flood, mass movement  
Climatological events: Extreme temperature, drought, forest fire

Source: © 2017 Münchener Rückversicherungs-Gesellschaft, Geo Risks Research, NatCatService (January 2017)

# Impact of climate change



## In Ireland

- Average annual national rainfall has increased approx. 5%
- Average annual temperature increased approx. 0.8°C

## On Irish Agriculture

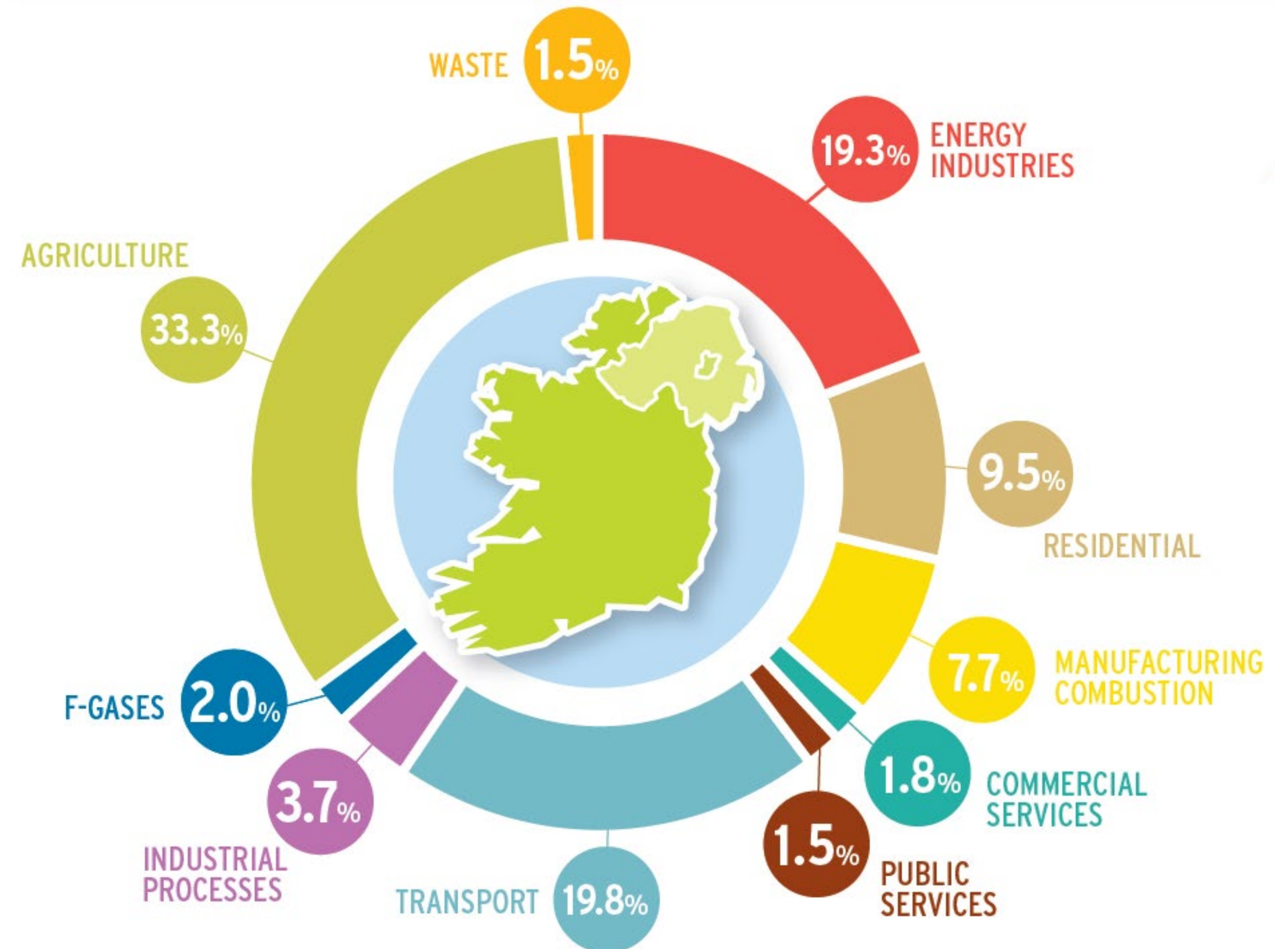
- Higher risk of disruption of agricultural activities
- Precipitation may occur in more intense downpours
- Agriculture's vulnerability to seasonal extremes have been highlighted in the past e.g. extreme flooding and fodder crisis
- Extreme events are likely to increase in intensity
- Agricultural management systems may need to adapt to future climatic trends



# Role of Agriculture in our emissions



- Agriculture largest contributor to GHG emissions in Ireland
- Main source of Ireland's agricultural GHG's is methane from ruminant digestion (enteric fermentation).
- Nitrous oxide also plays a big role

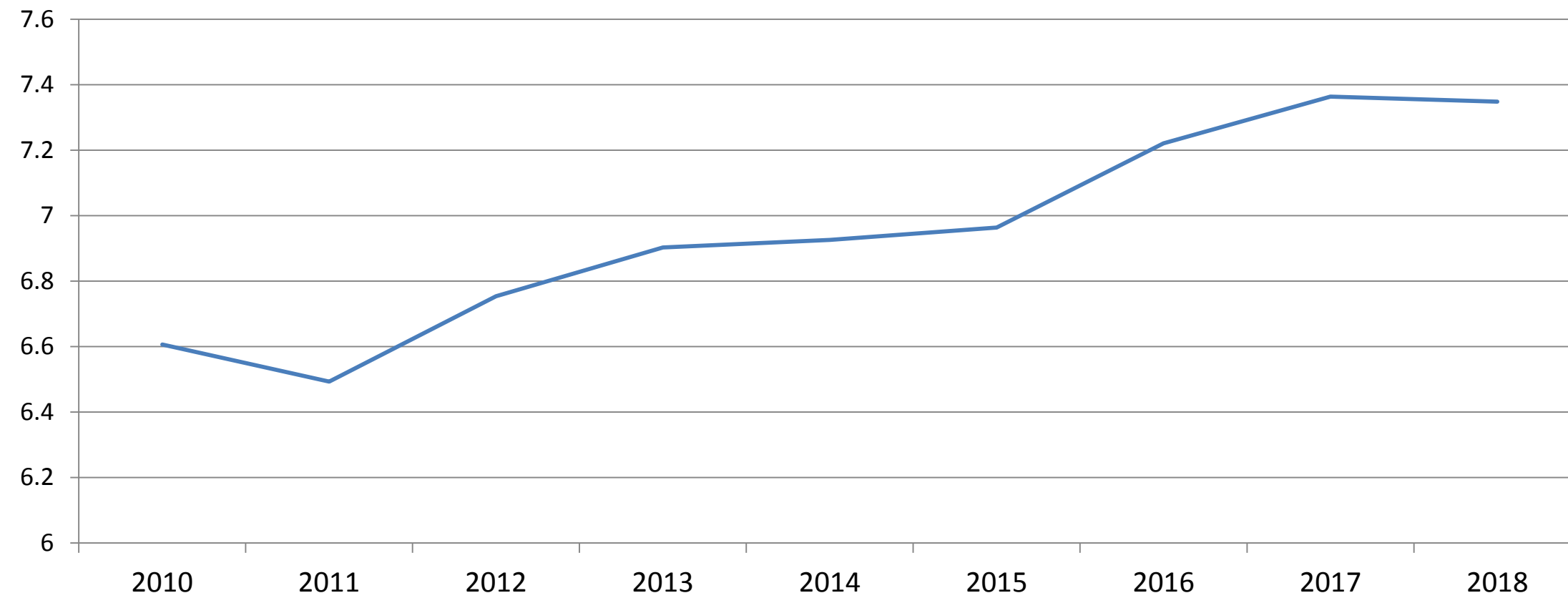


Ireland's Greenhouse gas emissions by sector for 2017 (Source: EPA 2019)

# Animal numbers



Total herd (m's)



## Herd summary

- Total herd 7.4m (June '18)
- Increase in 0.9m in the National Herd over the last 7 years (+13.2%)

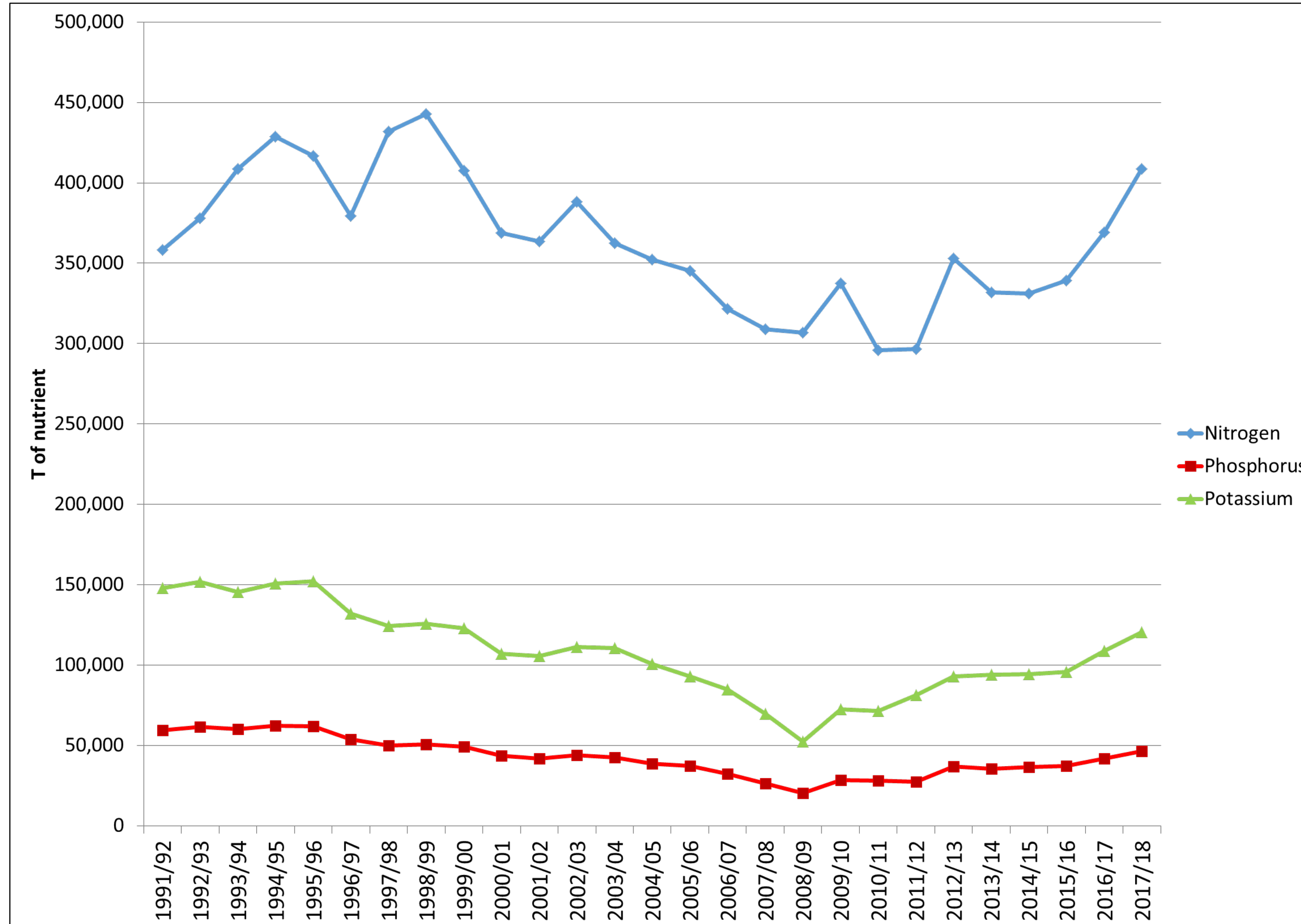
## Cow summary

- 2.53m cows (1.48m Dairy and 1.05 Suckler)
- Growth driven by growth in dairy cows (+30%)





# Fertiliser use



N – 408, 495 t in 2018 (10.6% increase)  
 P – 46, 387 t in 2018 (10.7% increase)  
 K – 120, 267 t in 2018 (10.6% increase)

Stabilised urea sales in 2018 were 3, 241t which is less than 1% of total N fertiliser sales



# The Climate Change Challenge



## *GHG Emissions:*

**> 30% of GHG emissions from Agriculture**

**EU agricultural emissions are approx. 10%**

## *GHG Targets:*

**20% emissions reduction by 2020;  
30% by 2030**

**Both GHG and ammonia emissions projected to increase by 2030**

## *Sustainability is Key:*

**Ambition to increase agriculture production while militating GHG emissions**

**FW2025 and feeding an increasing world population**

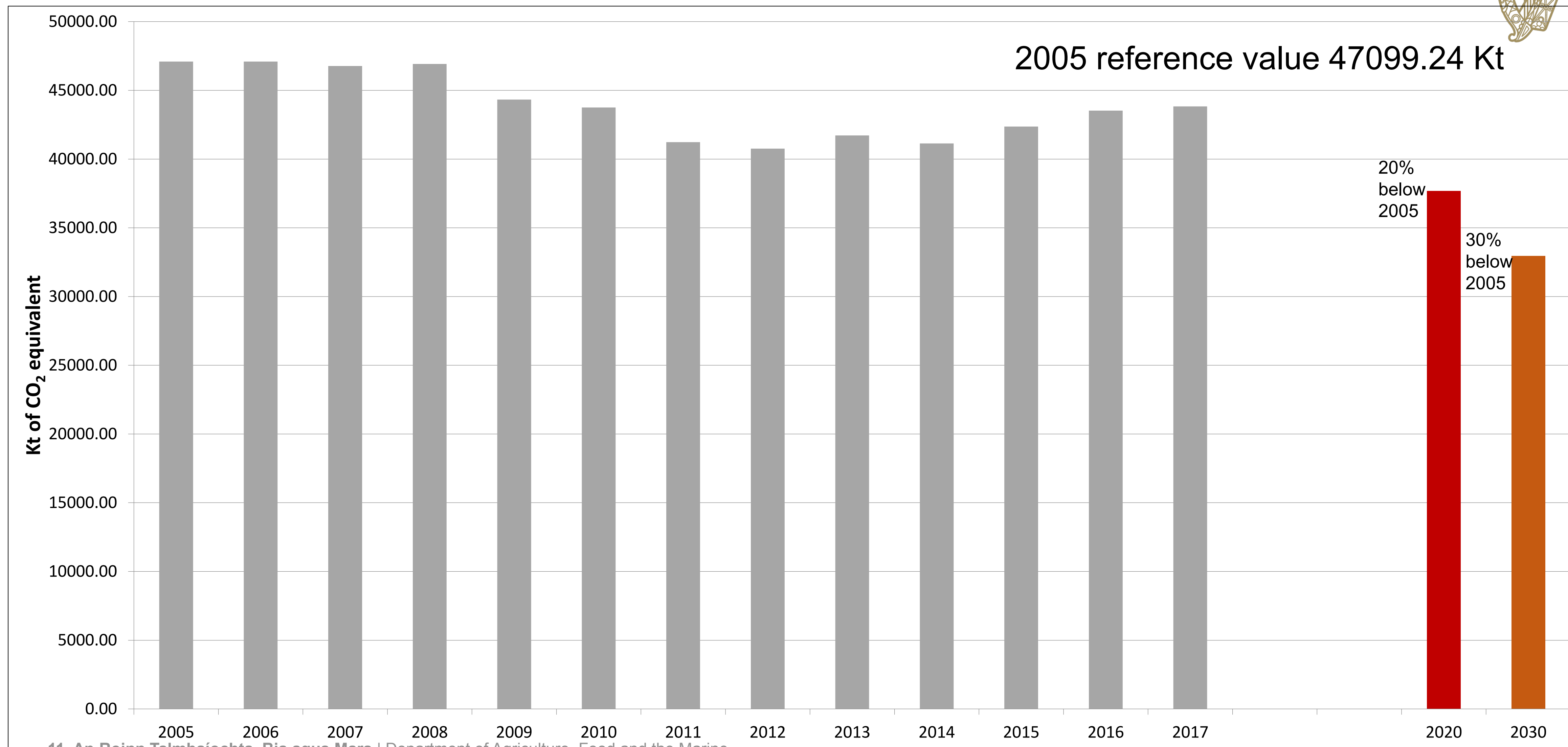
## *Adaption challenges (livestock):*

**Diseases; Changes to grazing season and protocols; Stress to livestock; Temporary or urgent movement of livestock;**

**Increased meal/silage requirements; Limited/poorly conserved or damaged silage and grass utilisation; Difficult harvesting conditions and reduced harvesting windows  
Water shortages**



# Greenhouse Gas Emissions





# Ammonia



Ammonia is a colourless gas and its deposition affects;

- loss of biodiversity, eutrophication of surface waters and soil acidification
- negative impact on human health including short-term irritation of the eyes and lungs



Figure 3.7: Contrast between the epiphyte flora of a birch tree trunk at a clean location in northern Britain (left,  $0.4 \mu\text{g m}^{-3} \text{NH}_3$ ) and in the woodland on Moninea Bog (right,  $\sim 10 \mu\text{g m}^{-3} \text{NH}_3$ ). The natural epiphyte flora of this area has in this case been replaced by a thick slime of algae.

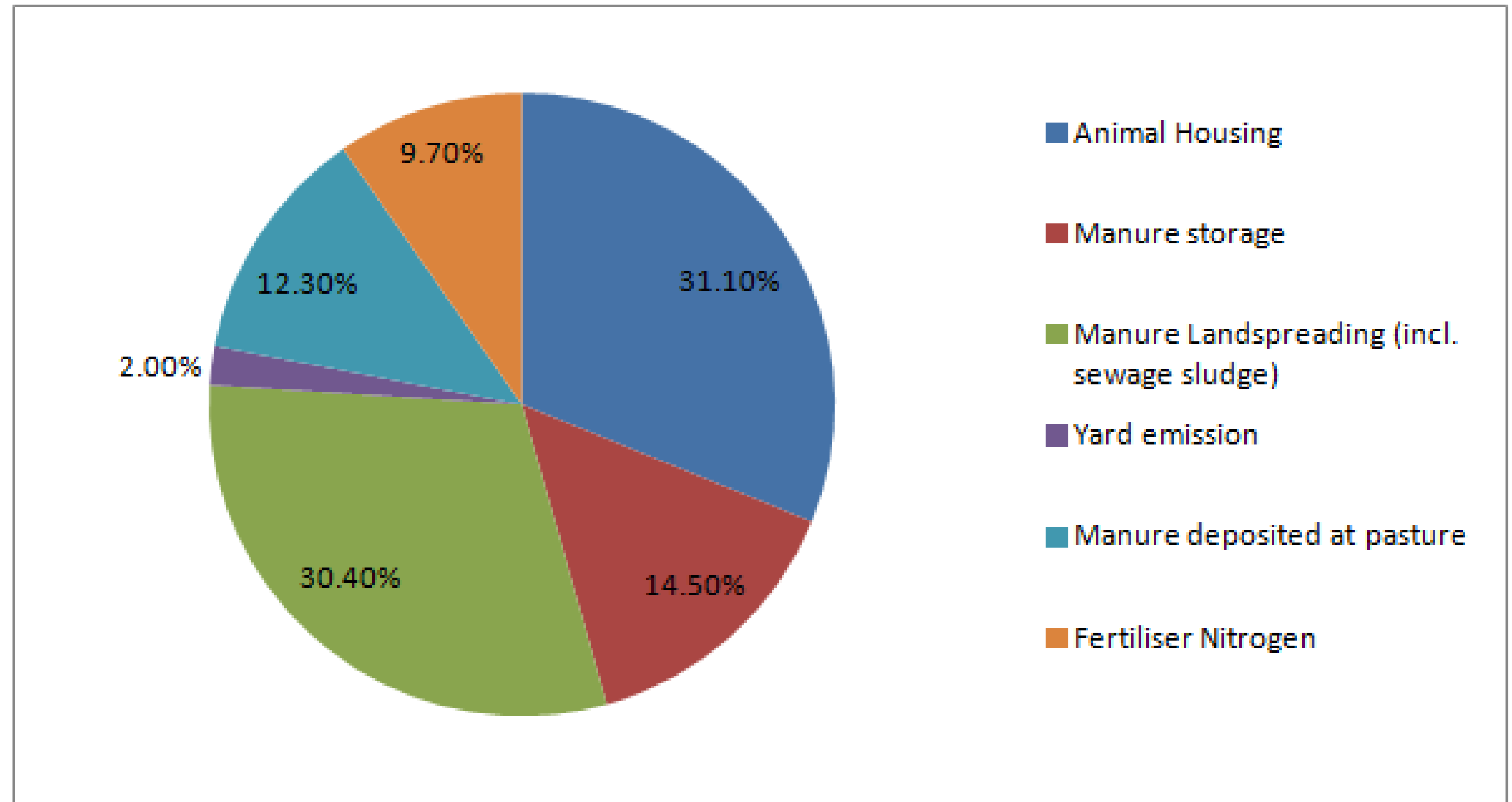
© Left, Ian Leith; right, Mark Sutton



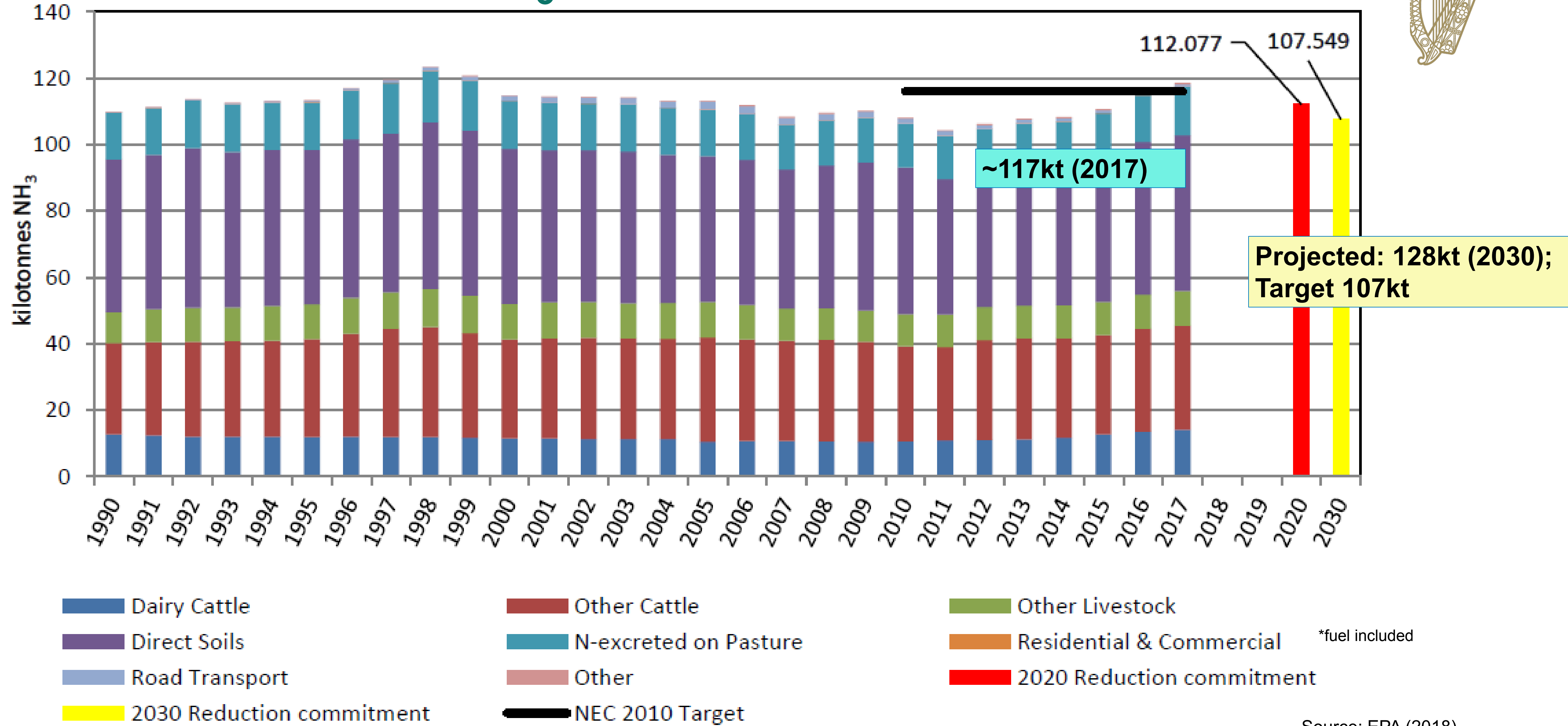
# Ammonia emissions – The Challenges



Agricultural activities account for over 99% of the national ammonia (NH<sub>3</sub>) emissions.



# Trends in NH<sub>3</sub> emissions 1990-2016



Source: EPA (2018)



# Agricultural Policy



**‘an approach to carbon neutrality which does not compromise the capacity for sustainable food production’**



# Reducing Emissions from Agriculture

## Abatement

### On Farm Efficiencies/ Measures

Use of LESS, protected urea, enhanced NMP, precision agriculture

Animal feed and breeding strategies

## Sequestration

Afforestation (av. 8000ha/year needed)

Reduced management intensity of C rich soils (peat) & better soil fertility

## Displacement/ Substitution

### Energy Efficiencies/ Biomass

Set a target for the level of energy to be supplied by indigenous biomethane injection in 2030

**Reduced emissions from Agriculture**



# National Climate Policy





# Objectives of the DAFM Adaptation Plan



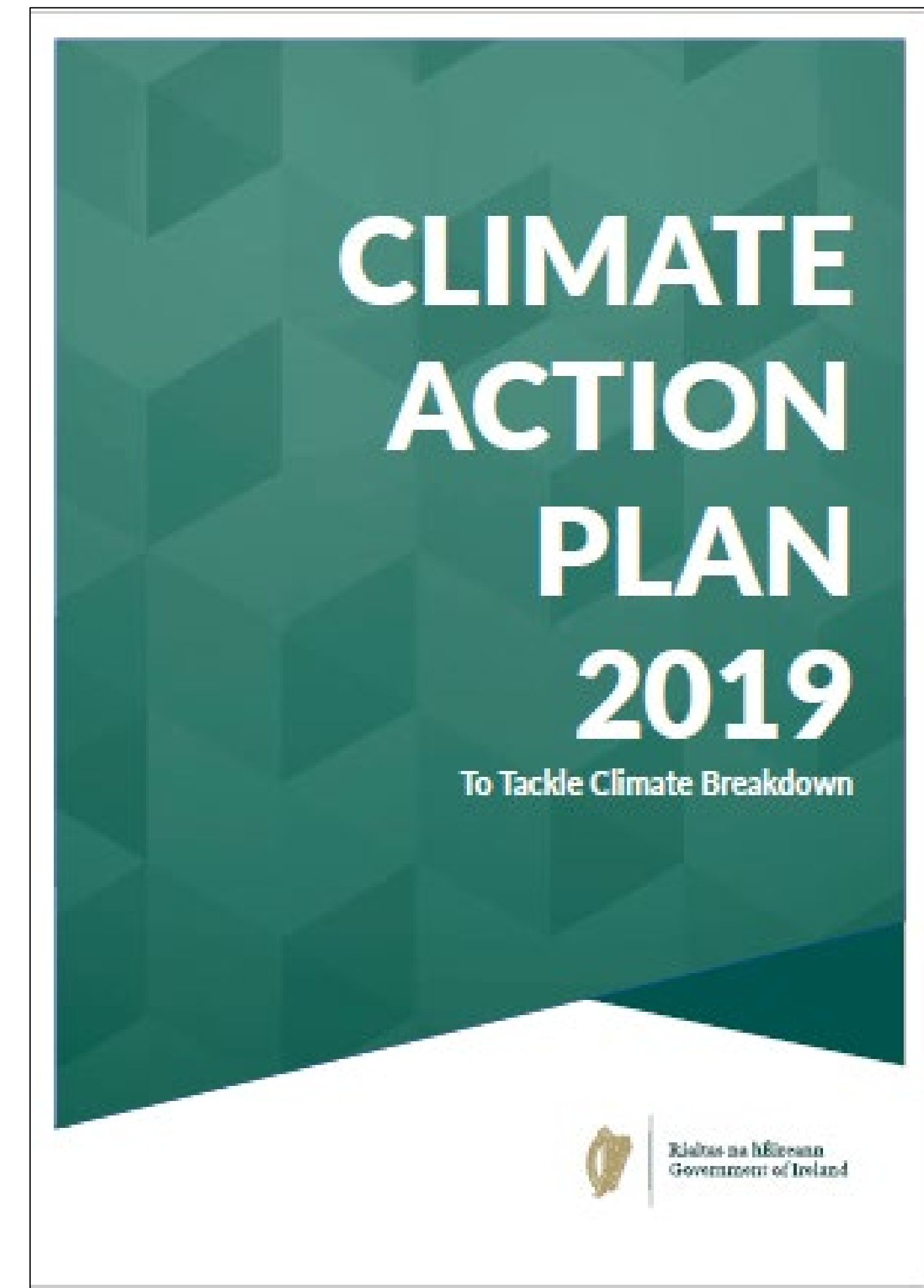
- To **raise awareness** of the consequences of climate change in the agriculture, seafood and forest sector
- Have a **joined up approach** to adaptation within the agriculture, forest and seafood sector
- **Reduce vulnerability** and **increase resilience**
- **Embed** adaptation planning in sectoral policies



# All-of-Government Climate Action Plan



- First all-of-government plan with sectoral targets
- Amendment to Climate Action Bill to make it legally binding
- Establishment of Oireachtas Climate Action Committee- Ministers and public bodies accountable
- 183 actions, 34 for agriculture (120 sub-actions)
- Quarterly reporting to new Climate Action Delivery Board D/Taoiseach
- Updated annually – Climate Plan 2020



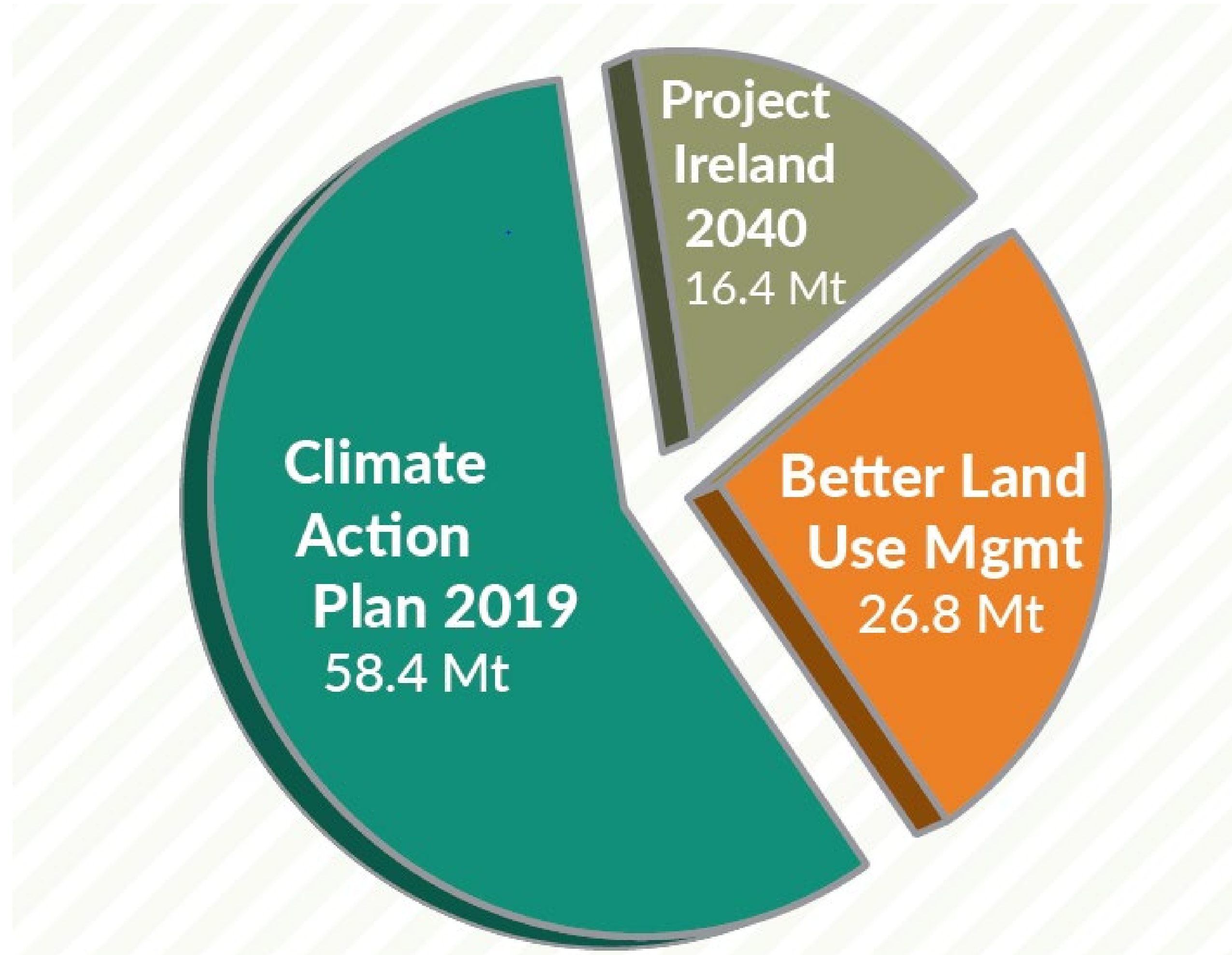
# Sectoral Targets



| Key Sectoral Targets |        | Carbon Pricing & Cross-cutting Policies   |
|----------------------|--------|---|
| Electricity          | 50-55% | <ul style="list-style-type: none"> <li>▪ Carbon tax of €80 per tonne</li> <li>▪ Mobilise 26.8mt CO2 credits from land use</li> <li>▪ Reform Public Spending Code to increase the shadow price of carbon</li> <li>▪ Mobilisation of finance</li> <li>▪ Capacity &amp; Capability building in research and development</li> </ul> |
| Transport            | 45-50% |   |
| Built Environment    | 40-45% |   |
| Enterprise           | 10-15% |   |
| Agriculture          | 10-15% |   |



# Gap to Target



**101.6MT CO2 eq**

# Targets for Agriculture



| 2017 Provisional Emissions | 2030 Projected Emissions based on NDP | 2030 Required Emissions Based on MACC |
|----------------------------|---------------------------------------|---------------------------------------|
| 20 Mt                      | 21 Mt                                 | 17.5 – 19 Mt                          |

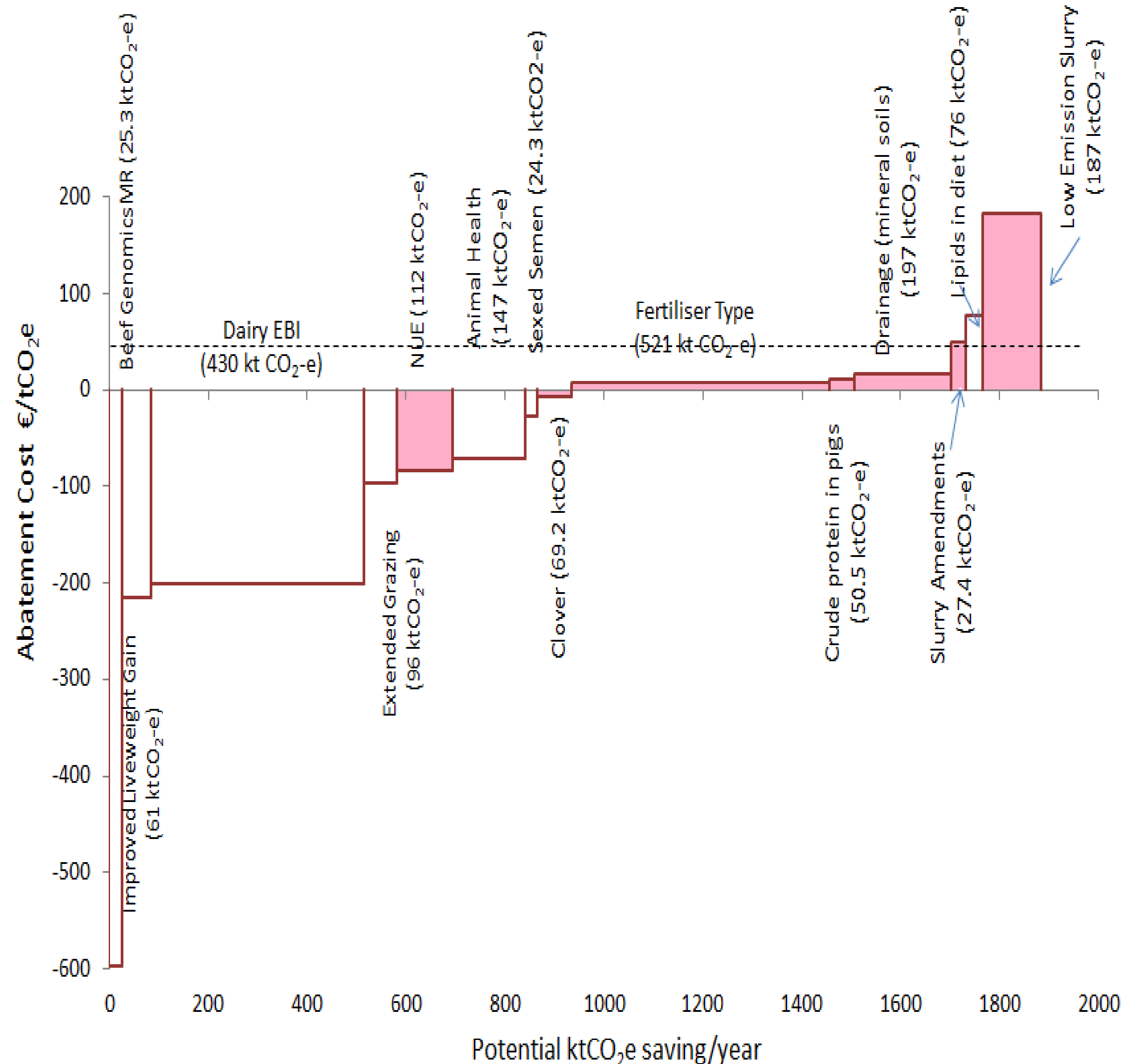
Equivalent to 16.5-18.5 MtCO<sub>2</sub>eq. cumulative abatement

Achieve 26.8 Mt CO<sub>2</sub>eq. abatement through LULUCF actions over the period 2021 to 2030, comprised of:

- 8,000 ha per annum of newly planted forest, and sustainable forest management of existing forests (21 MtCO<sub>2</sub>eq. cumulative abatement)
- at least 40,000 ha of reduced management intensity of grasslands on drained organic soils (4.4 MtCO<sub>2</sub>eq. cumulative abatement)
- better management of grasslands, tillage land and non-agricultural wetlands (1.4 MtCO<sub>2</sub>eq. cumulative abatement)

Set a target for the level of energy to be supplied by indigenous biomethane injection in 2030

# What does this mean for Agriculture - Teagasc MACC



1. Improved Beef Maternal Traits
2. Beef Genetics: Optimised live-weight gain
3. Dairy EBI
4. Extended grazing
5. Nitrogen-use efficiency
6. Improved animal health
7. Sexed Semen
8. Inclusion of Clover in pasture swards
9. Fertiliser Type (Reducing N emissions)
10. Reduced crude protein in pigs
11. Draining wet mineral soils
12. Slurry amendments
13. Adding Fatty Acids to dairy diets
14. Low-emission slurry spreading\*

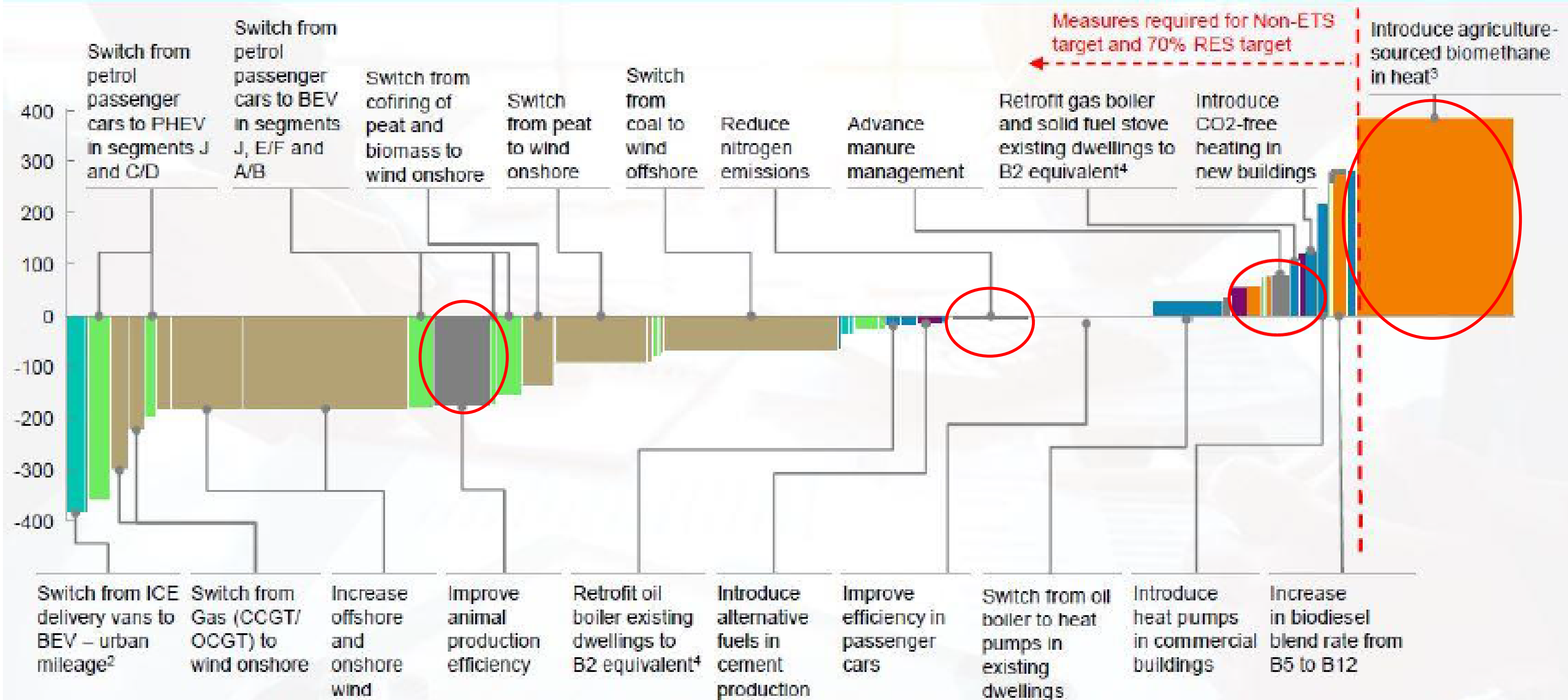
\* Double dividend as it also reduces ammonia emissions

# Marginal Abatement Cost Curve



Average abatement cost to 2030<sup>1</sup>, EUR/CO<sub>2</sub>

- Biofuels
- Industry
- Transport - Buses/coaches
- Transport - Passenger cars
- Electricity
- Agriculture
- Built Environment
- Transport - Trucks







# 9 Specific Objectives for CAP post-2020



# Reform of CAP



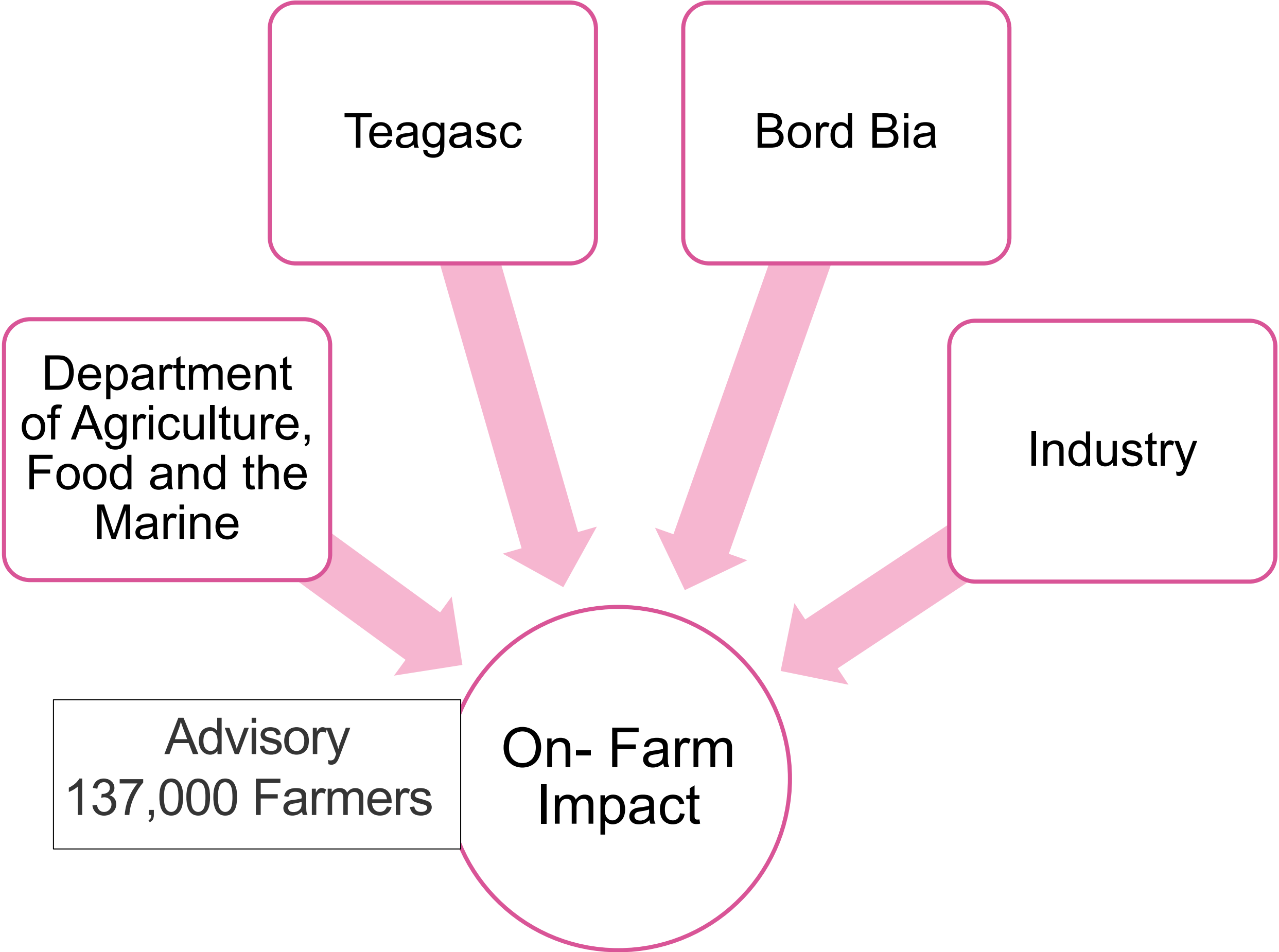
## Reform of the CAP:

- One national CAP Strategic plans to cover all interventions; Pillar I and Pillar II
- Move to performance management approach
- Developing of annual indicators and targets
- Failure to meet targets may result in Commission seeking action plan
- Enhancing environmental and climate ambition
- 40% of CAP's budget is expected to contribute to climate action



# Pathway to Delivery is Challenging

## Collaboration is essential



- CAP is seen as default delivery mechanism
- Role of regulation
- Role of market – Origin Green
  
- Others?



European Union

# 'Our house is on fire': EU parliament declares climate emergency



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## Climate change: Ireland declares climate emergency

9 May 2019



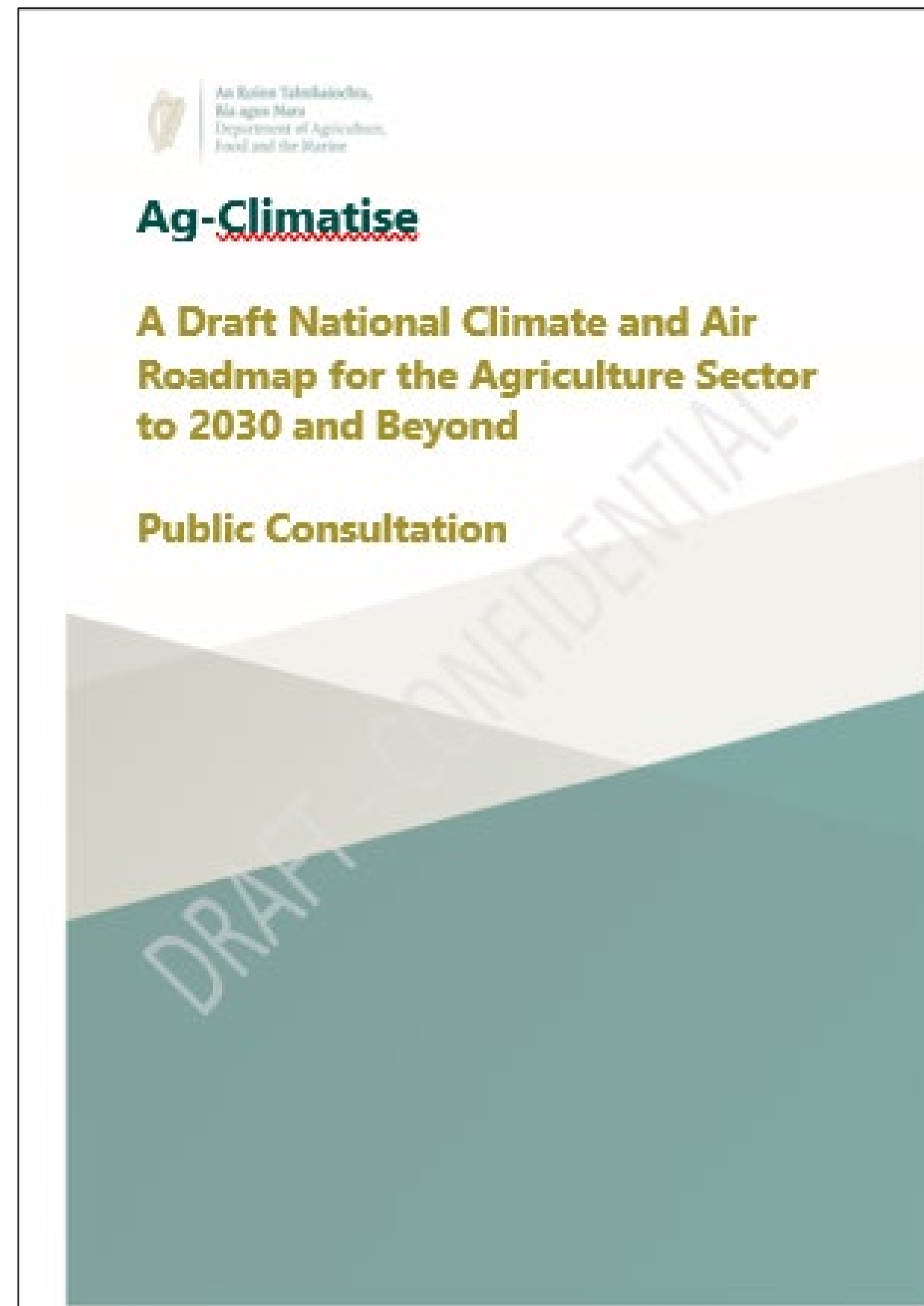
## “Emergency”

a serious, unexpected, and often dangerous situation requiring **immediate** action

Immediate, urgent, rapid and swift actions required to meet GHG targets for agriculture

- Sustainability credentials
- National Herd

# Evolving Climate Policy Landscape



## Ag-Climatise

- Roadmap for delivering climate and air targets
- Have your say- public consultation open till 10<sup>th</sup> January 2020



**Thank you**

**[climatechange@agriculture.gov.ie](mailto:climatechange@agriculture.gov.ie)**

**<https://www.agriculture.gov.ie/ruralenvironment/climatechange/>**