Ricardo-AEA

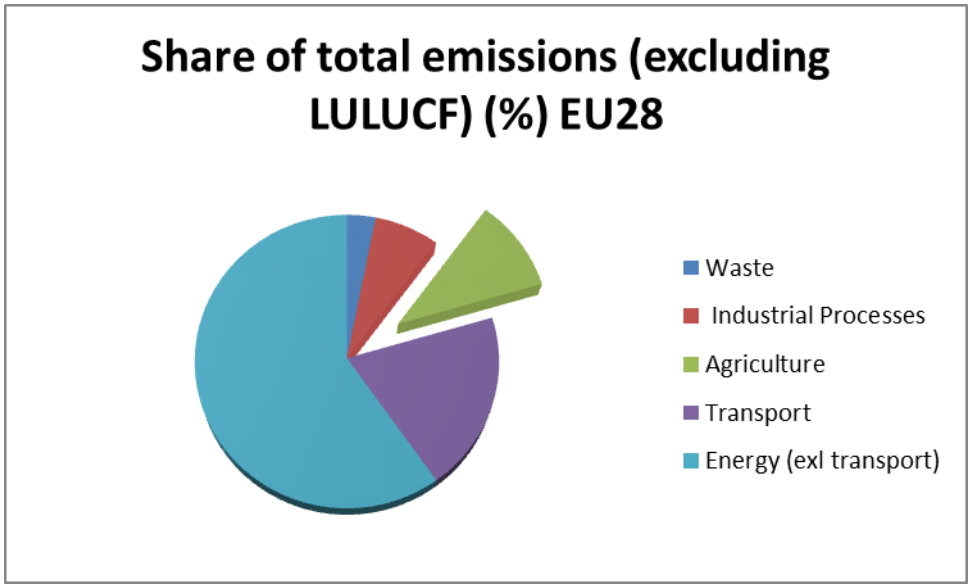
Introduction to policies and measures in the agriculture sector

Hugh Martineau – Principal Consultant (Agriculture)

Presentation overview:

- EU Agricultural emissions overview
- Challenges associated with cutting emissions from agriculture
- Marginal Abatement Cost Curve
  - Irish example
- Review of Measures
- Implementation Mechanisms

EU Agriculture Emission Overview:

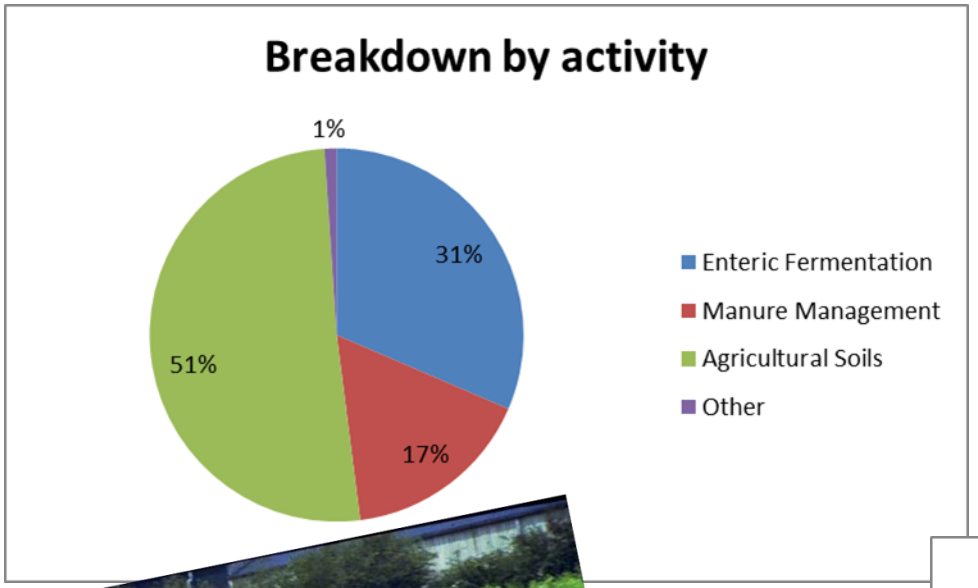


- EU 28 average 10.3%

Country	Agriculture share of total GHG emissions
Croatia	12.7%
Czech Republic	6.1%
Hungary	14%
Poland	9.2%
Slovakia	7.3%
Slovenia	9.9%

Source: EEA (2014)

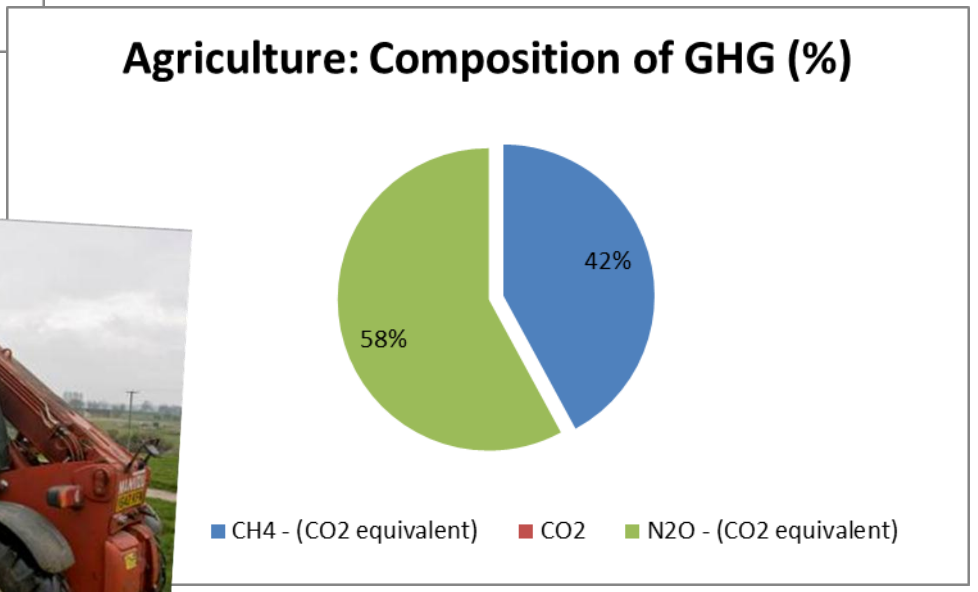
Sources of emissions:



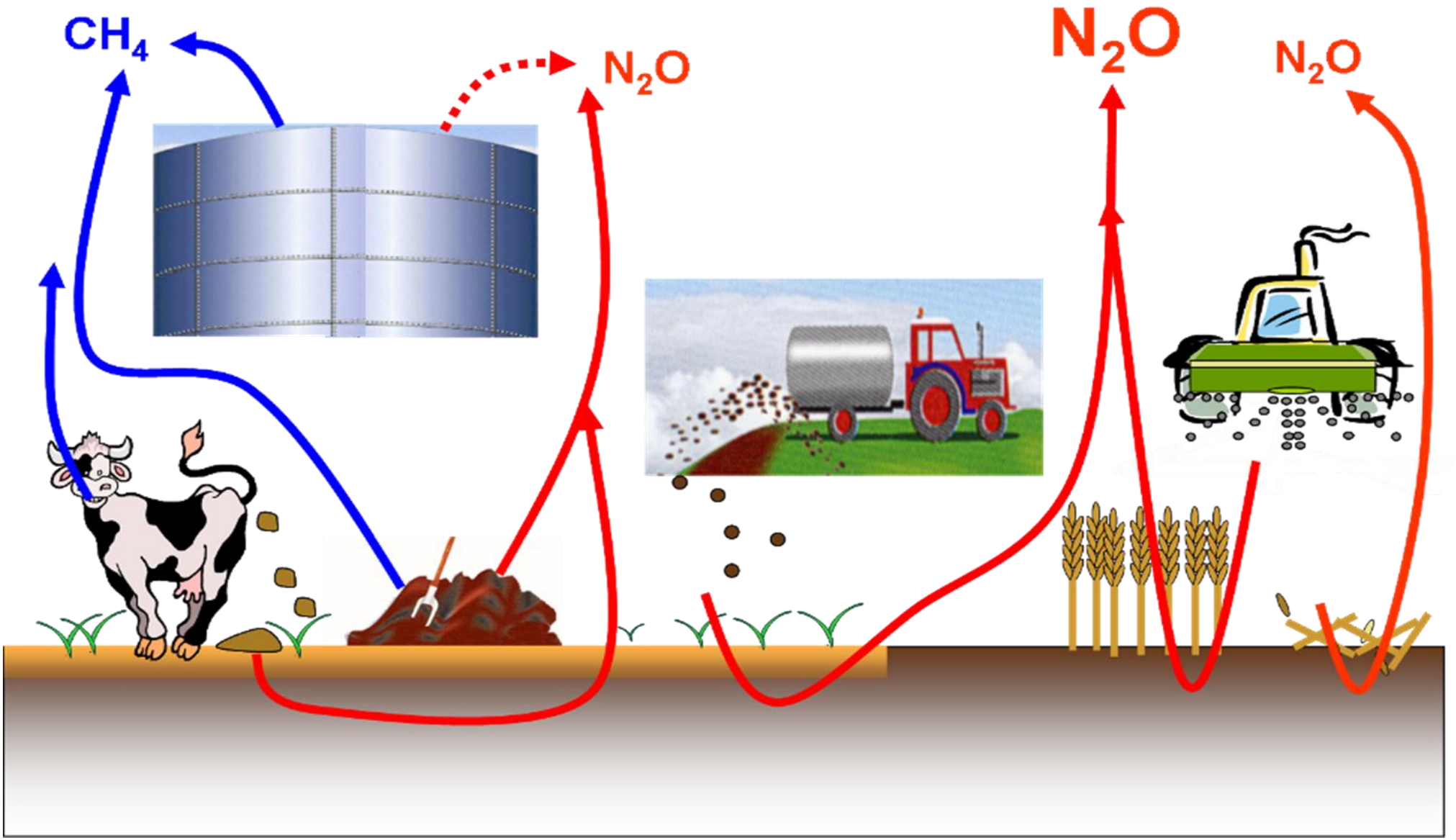
Enteric Fermentation: (CH_4)
- Direct livestock

Manure Management: (N_2O & CH_4)
- Storage and application of manures and slurries

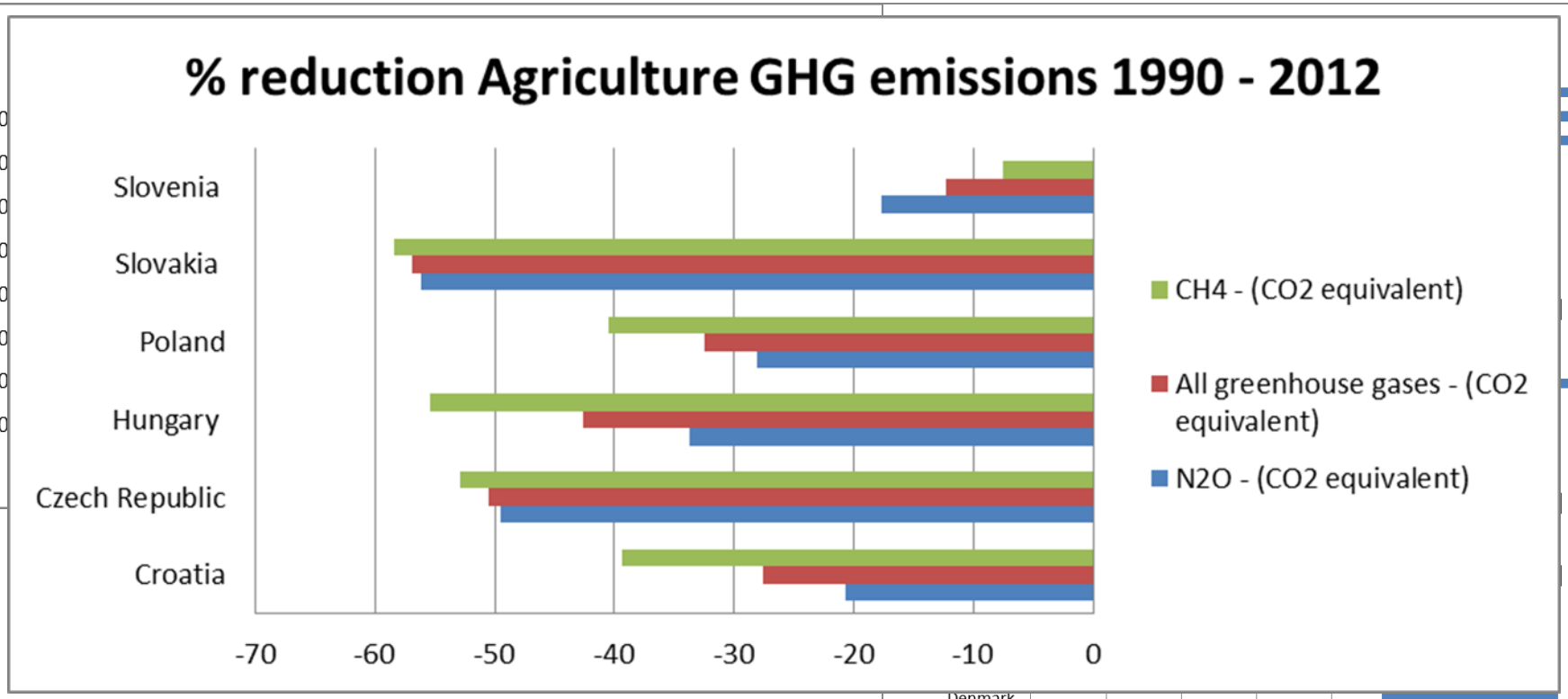
Soils (N_2O & CH_4)
- Cultivation
- Inorganic fertiliser applications



Sources of emissions:



EU Agriculture Emission Overview:

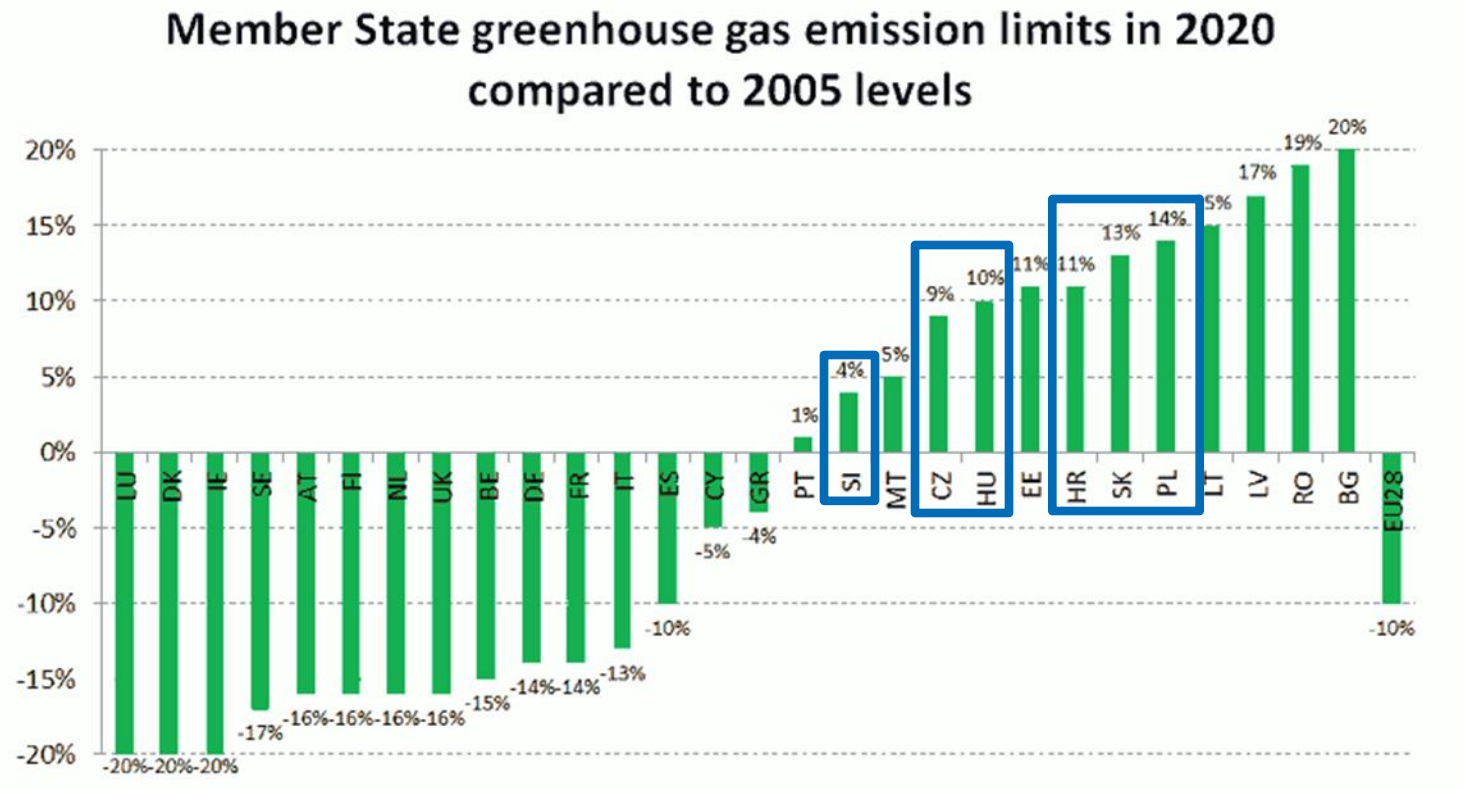


- 37% reduction (SI, HR, PL, CZ, HU, SK)

Contributing factors

- Reduced total productivity?
- Livestock numbers?
- Nutrient efficiency (Nitrates Directive)?

The Challenge:



- Agriculture must play its part

- BUT; reduce emissions, not production
  - Economic, social and ethical reasons for optimising production

Total GHG vs GHG intensity

RICARDO-AEA

GHG emissions = total CO_2e

GHG intensity = GHG produced per:

- **tonne of crop**
- **litre of milk**
- **kg of meat**

By decreasing GHG intensity farmers can make a positive contribution

- **Improving efficiency of N use**
- **Improving efficiency of feed conversion**
- **Storing manures to reduce emissions**
- **Protecting and enhancing carbon stores in soils and trees**

The accounting challenge:

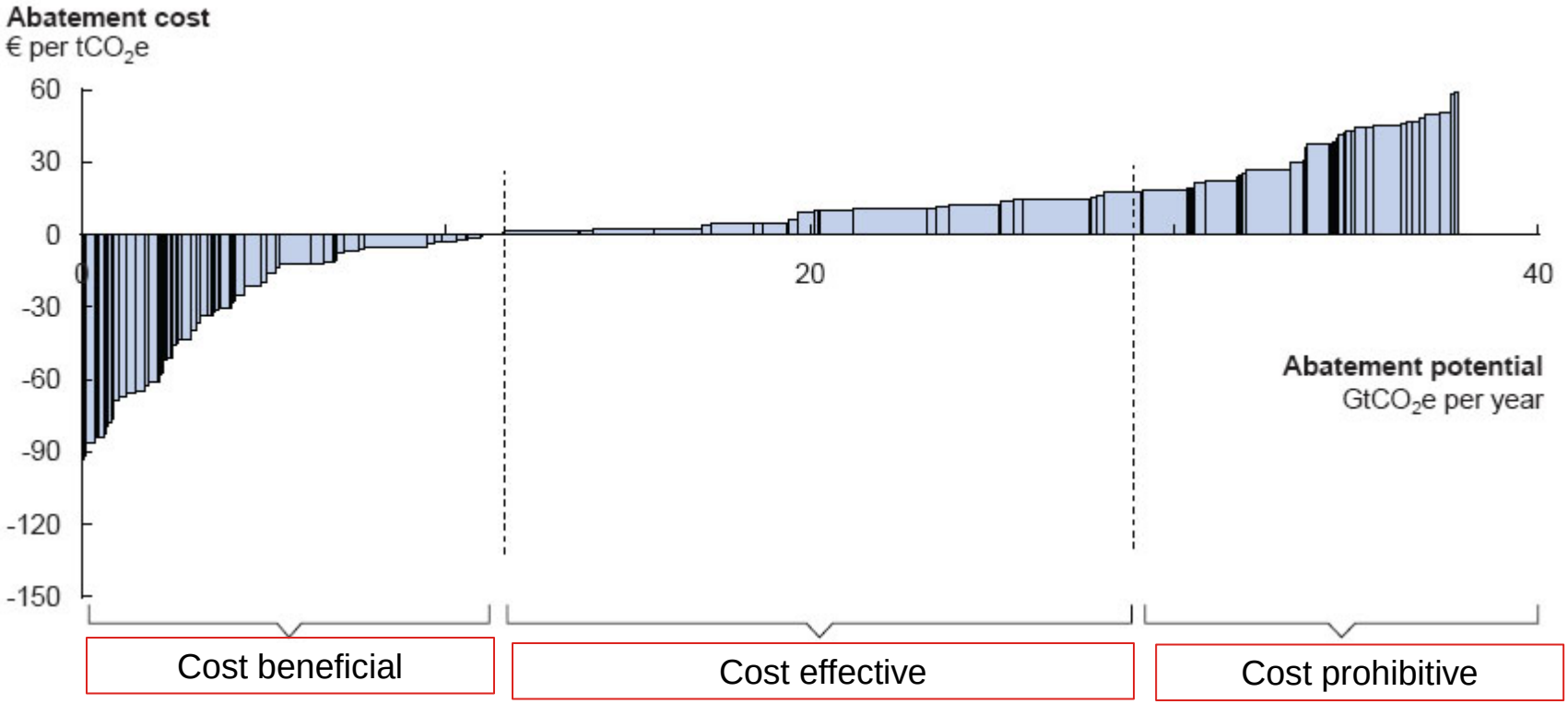
- Top down (tier 1&2) level inventory reporting does not account for efficiency measures without reviewing emissions factors.
- Bottom up (tier 3) can account for alternative technology and variations in production systems

Examples of existing measures

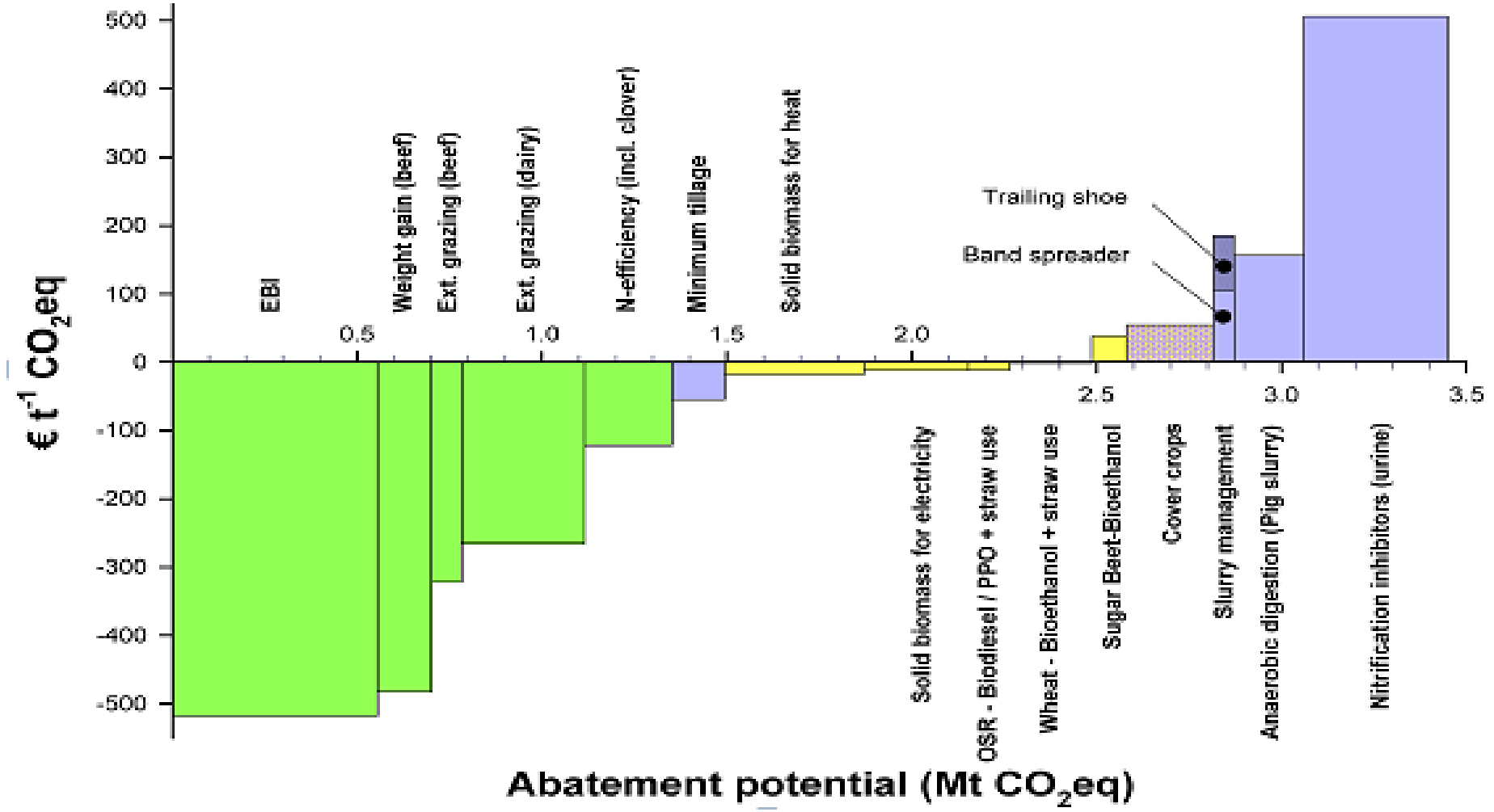
Measure	Major benefits	Accountable ?
Promote organic farming	Zero inorganic fertiliser inputs	Yes
Reduced soil cultivations	Reduced emissions from soil	Specific emissions factors and detailed activity data required
Fertilization plans including precision farming techniques	Optimal fertiliser usage, improved efficiency	?
Support for renewable energy schemes such as biogas production	Reduced CH_4 & N_2O from manure and slurry stores & displaced energy	?
Improved animal health	Improved production efficiency	Requires detailed emissions factors appropriate for production systems

Reviewing appropriate measures:

Marginal Abatement Cost Curve



Reviewing appropriate measures: MACC - Ireland



Using Marginal Abatement Cost Curve

- A good approach for a high level effectiveness assessment of measures

- It does not factor in wider benefits and risks (externalities) beyond financial and GHG impacts:
  - Environmental
    - Adaptation, pollution, Biodiversity
  - Animal welfare
  - Land Use
  - Practical implementation factors
  - Technology barriers
  - Legislative constraints
  - Trade

- Undertake ‘externality assessment’

Selection of measures:

Country	Priority Measures	Activities
Ireland	Extended grazing	Increasing the grazing period to optimise grazed grass availability
	Improved genetics (EBI)	Using Estimated Breeding Index to improve genetic merit of beef and dairy herds
	Improved weight gain	Improve the efficiency of production systems in beef herds (early finishing)
	Nutrient efficiency and timing	Match crop requirements to nutrient applications and availability
UK	Manure management and storage	Roof and increase manure storage facilities
	Optimised N fertiliser application and timing	Precision farming techniques including Green Area Index assessment for N applications
	Health and nutrition planning	Improved animal health planning increases production efficiency

Mechanisms for implementation

- Existing policy framework: Common Agricultural Policy
  - Pillar 1: Cross Compliance and Greening Measures
  - Pillar 2: Rural Development Funding
- Advice and Incentives
  - Payments to adopt practices and technologies
  - Advisory activity to promote best practice (Farm Advisory System)
- Farmer and NGO led initiatives
  - UK: Greenhouse Gas Action plan

Questions and Discussion

Reviewing appropriate measures: MACC France