

Soil Carbon Sequestration & Carbon Neutral Farming

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Introduction

- Carbon Neutrality – Eurozone' new growth strategy
 - Balancing greenhouse gas (GHG) emissions with carbon sequestration in soil & woody vegetation



Farm Products GHG emissions*

	Beef	Dairy	Pig
Ireland	18.9 (5 th)	1.0 (1 st)	4.8 (1 st)
UK	21.1	1.2	6.0
EU Average	22.2	1.4	7.5

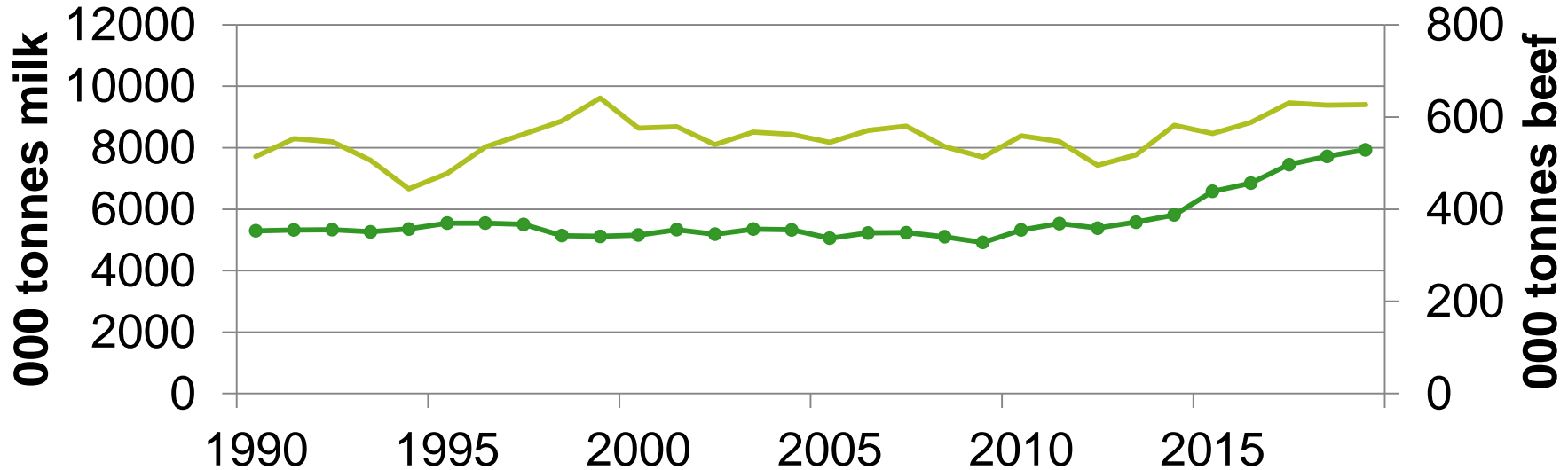
*kg GHG/kg product

Source: EU Commission Joint Research Centre

- Irish farmers well positioned in terms of GHG efficiency

Irish Agriculture Challenges

- Increasing demand for food products



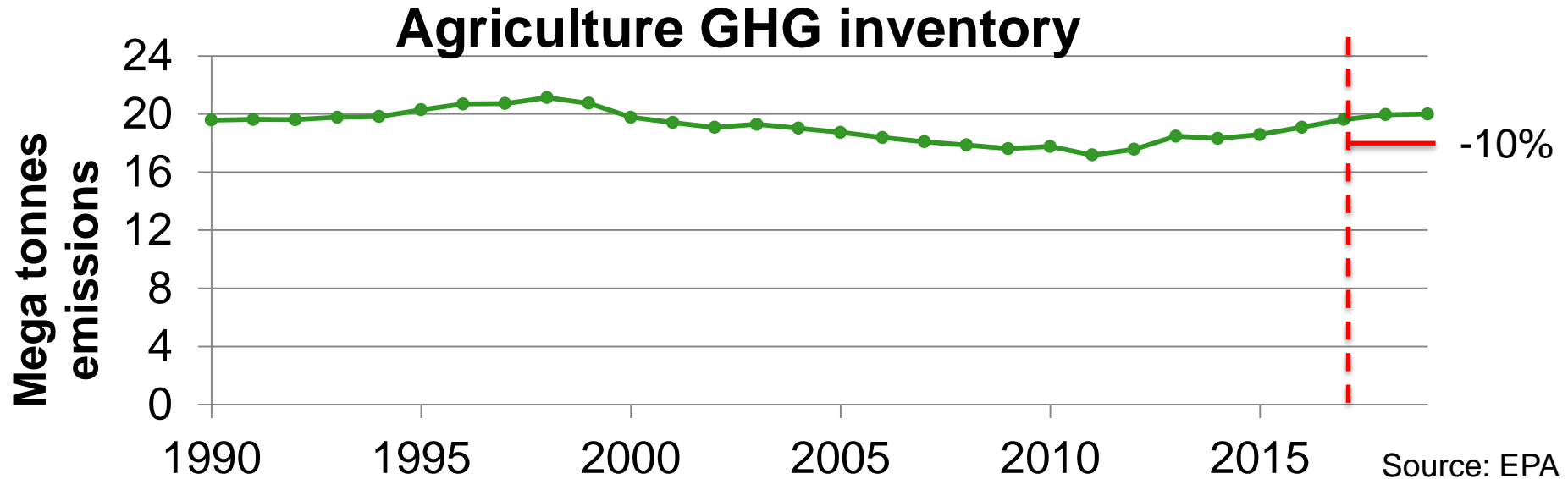
Source: CSO

● Milk Delivered — Beef production (RH Axis)



Irish Agriculture Challenges

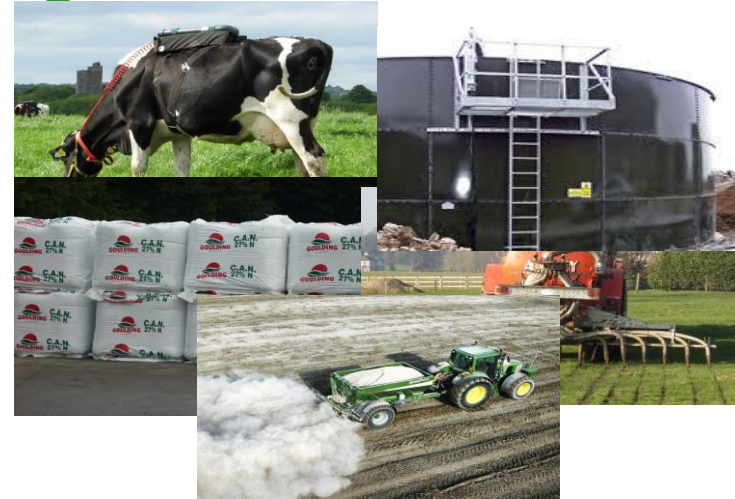
- Bovine herd \approx 85% of sector's GHG emissions



- Challenging to satisfy emission & food security targets

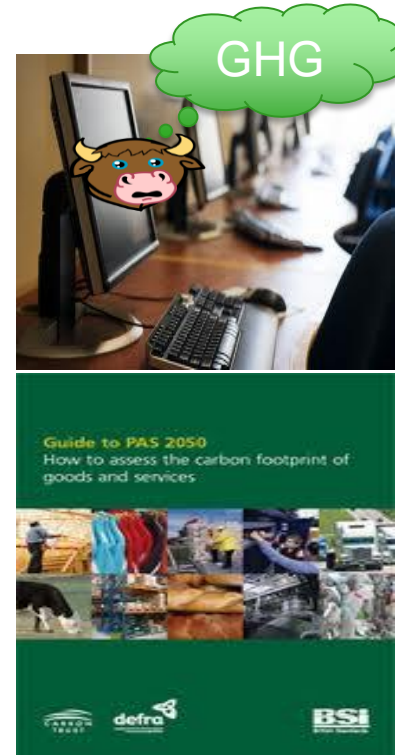
GHG's Emitted by Farms

- Methane (CH_4)
- Nitrous oxide (N_2O)
- Carbon dioxide (CO_2)
- GHG's warming effect expressed in terms of CO_2
 - 1 kg CH_4 = 25 kg CO_2
 - 1 kg N_2O = 298 kg CO_2



Whole Farm Modelling GHG's

- Life cycle assessment (LCA) applied to model GHG's and carbon sequestration
 - Impractical to measure GHG's on every farm
- Principles of LCA defined by International Standardization Organisation
- Carbon labels adhere to LCA standards/guides

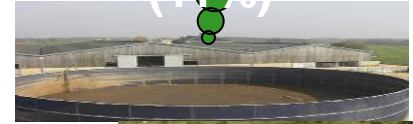


Beef Farm Annual GHG profile

Methane gas belched by cattle (62%)

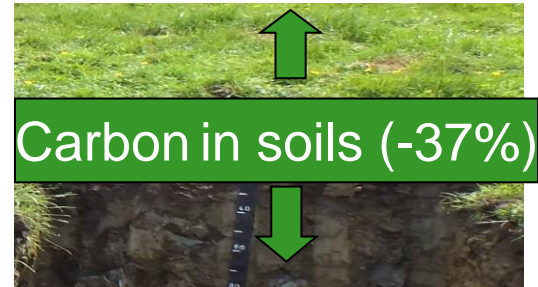
Nitrous oxide and CO₂ from chemical N & lime (19%)

Methane and nitrous oxide from manure (11%)

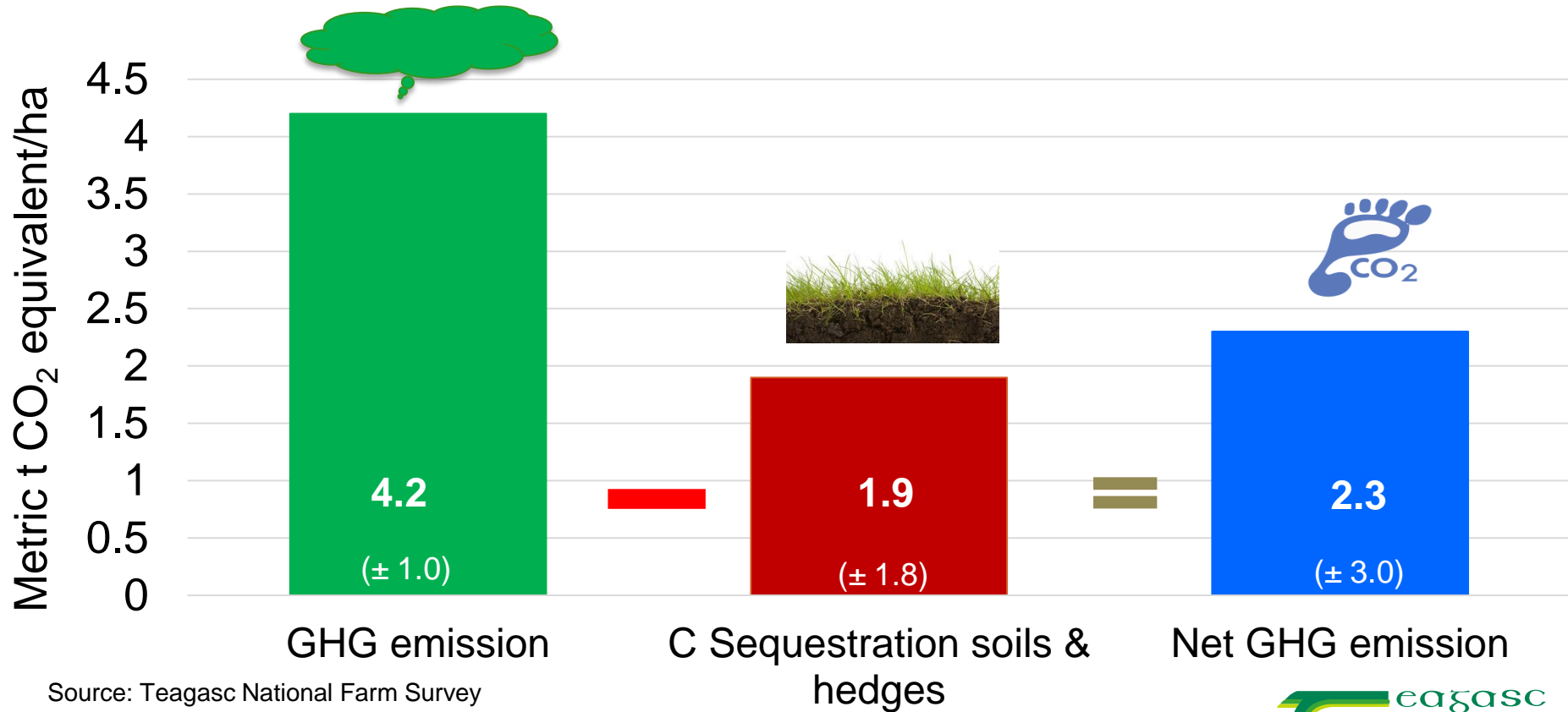


CO₂ embodied in feeds (5%)

CO₂ from fuels and power (3%)

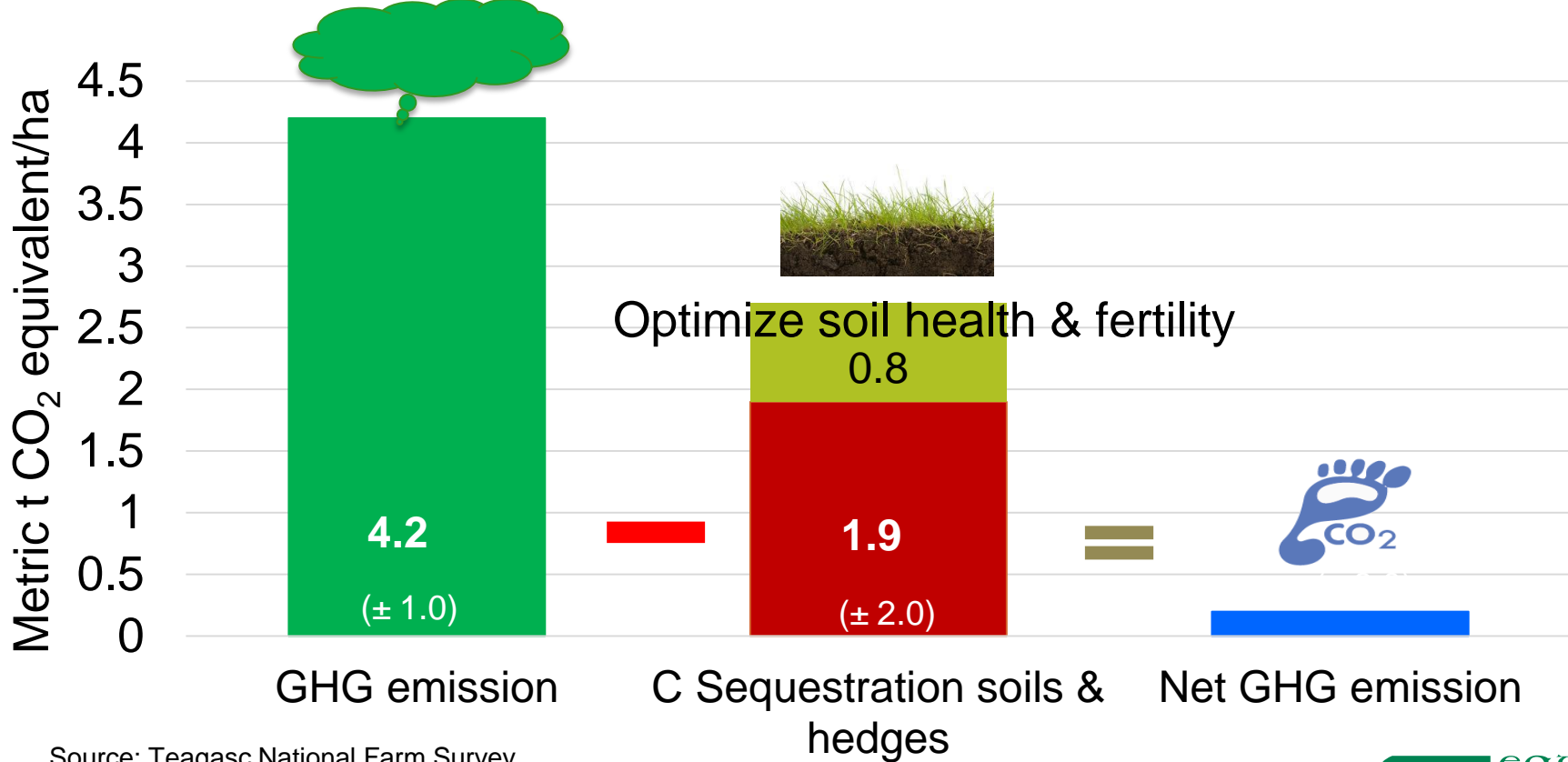


Average Beef Farm GHG budget



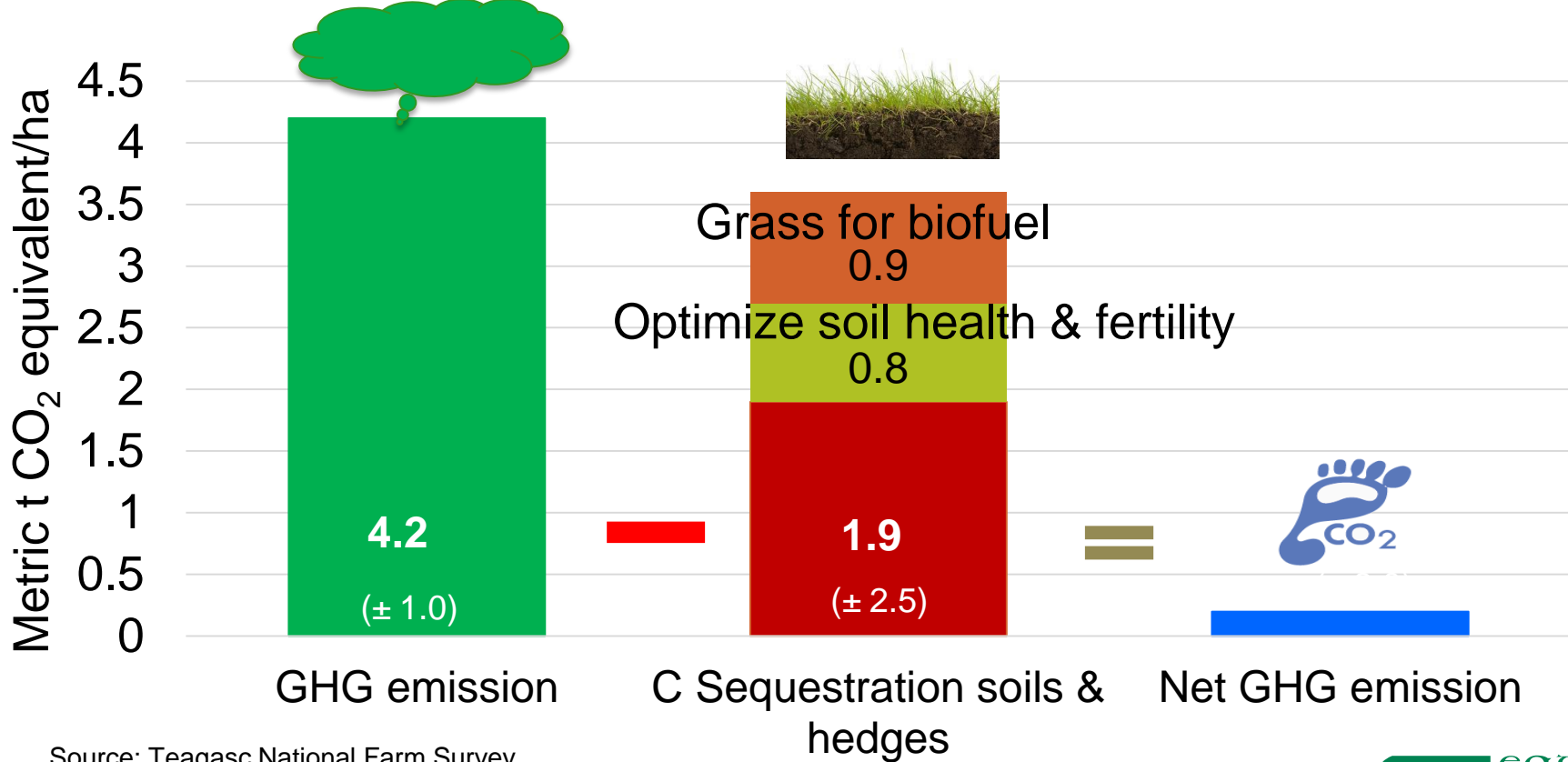
Source: Teagasc National Farm Survey

Carbon Neutral Beef Farm?



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Summary

- Grass-based cattle farms are net greenhouse gas emitters
- Quantity of GHG's reduced by C sequestration in grassland variable & uncertain (-1.9 to 5.5 t CO₂/ha)
 - Aim to monitor larger number of grassland sites
- Better soil & grassland management has capacity to bring cattle farms towards carbon neutrality

Thank you for listening

Questions?

Acknowledgements



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An Roinn
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