

Agriculture's contribution to Greenhouse Gas Emissions

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FOOD & DRINK EXPORTS

Source: Bord Bia 2017

The sector recorded the
7th
consecutive year of growth
in exports during 2016



37%

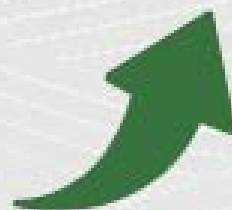
of Irish food & drink exports are destined for the UK, valued at **€4.13 billion**



Growth of

41%

or **€3.27 billion** since 2010



€11.15 billion

the value of Irish food & drink exports, an increase of **2%**



Other EU markets account for **€3.53 bn** or

32%



International markets account for **€3.49 bn**, or

31%



Irish food & drink is sold in

180
markets worldwide



MEAT & LIVESTOCK

Source: Bord Bia 2017

This sector represents

33%

of total food and drink exports

Irish meat and livestock is exported to **84** markets



€3.66 billion

the value of meat and livestock exports, a decrease of **2%**

Beef

€2.38bn

Beef exports were valued at €2.38 billion, a decrease of **1%**



Ireland is the **5th largest** net exporter of beef in the world



Exports have increased by

34%

or **€90.0 million** since 2010

Pigmeat

€615m

Pigmeat exports increased by **4%** to €615 million



Poultry

€275m

Poultry exports decreased by **14%** to reach €275 million



Sheepmeat

€240m

Sheepmeat exports grew by over **4%** to reach €240 million



Livestock

€150m

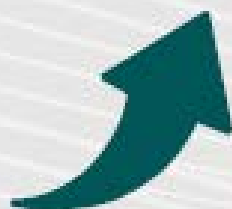
Livestock exports declined by **23%** to €150 million

DAIRY PRODUCTS & INGREDIENTS

Source: Bord Bia 2017

**€3.38
billion**

the estimated
value of dairy
exports, an
increase of
2%



50%

rise in the value
of dairy exports
from 2010 (€2.25bn)
to 2015 (€3.38bn)

Exports to
international
markets are worth
an estimated

**€1.66
billion,**

or **49%** of dairy exports



The UK accounts for

53%

of cheese exports



According to the European
Commission Medium term
outlook Irish milk production
is expected to grow over

40%

over the next decade

Ireland
exports
dairy to

155

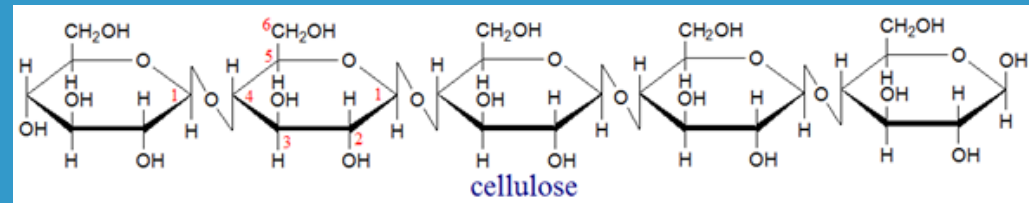
markets
worldwide



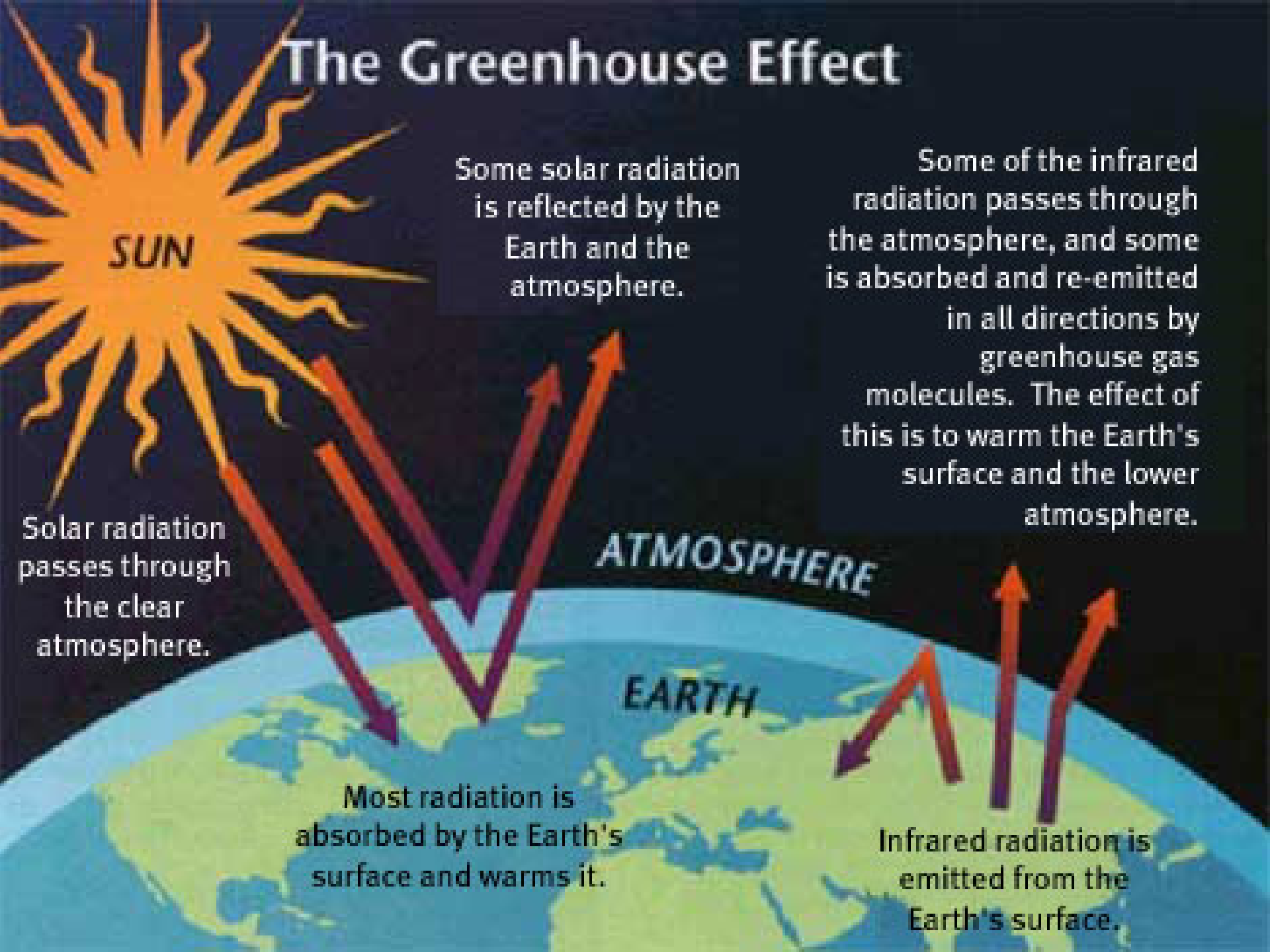
**The top
5 markets**

are the UK, China, the Netherlands,
Germany & the United States

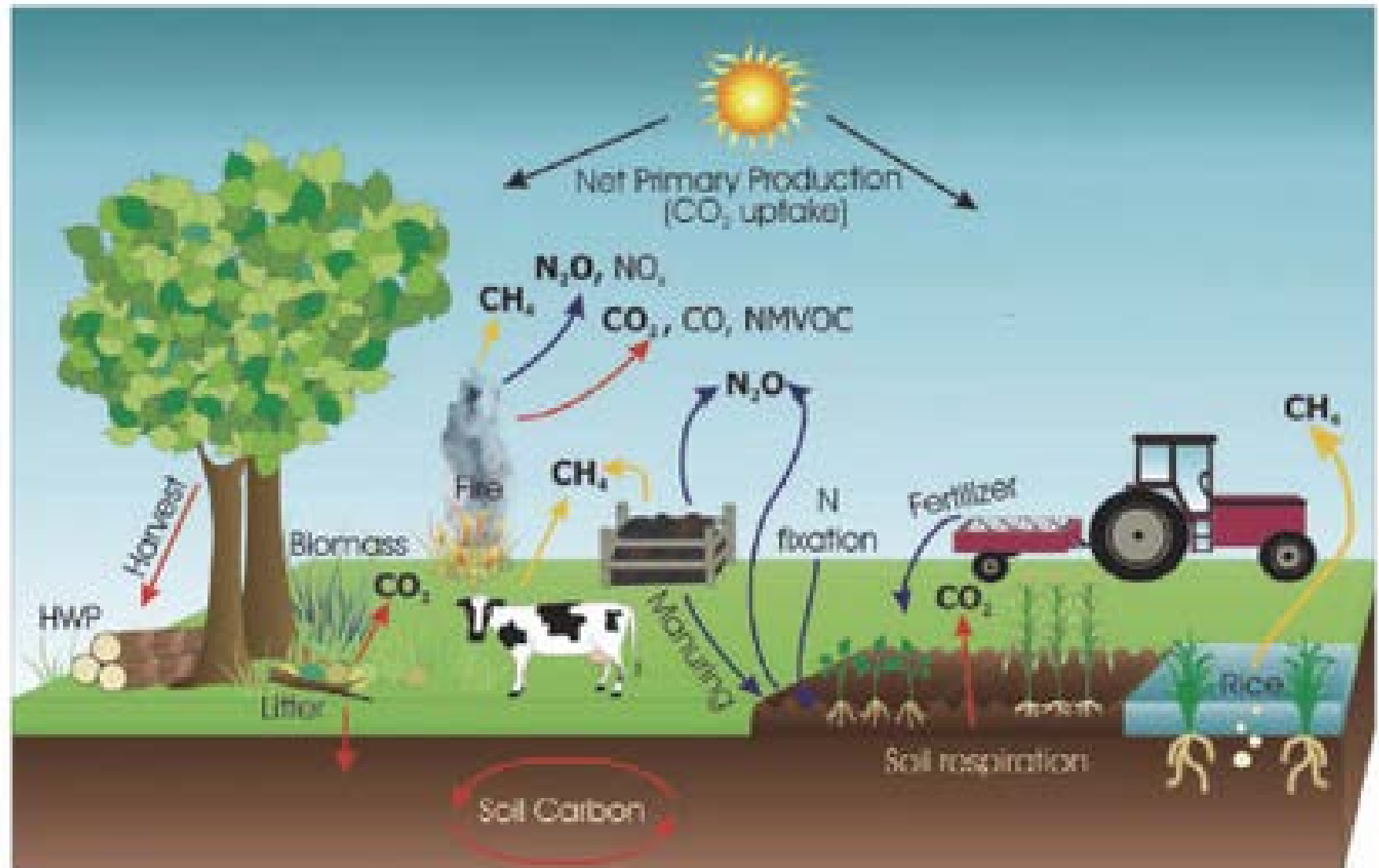




The Greenhouse Effect



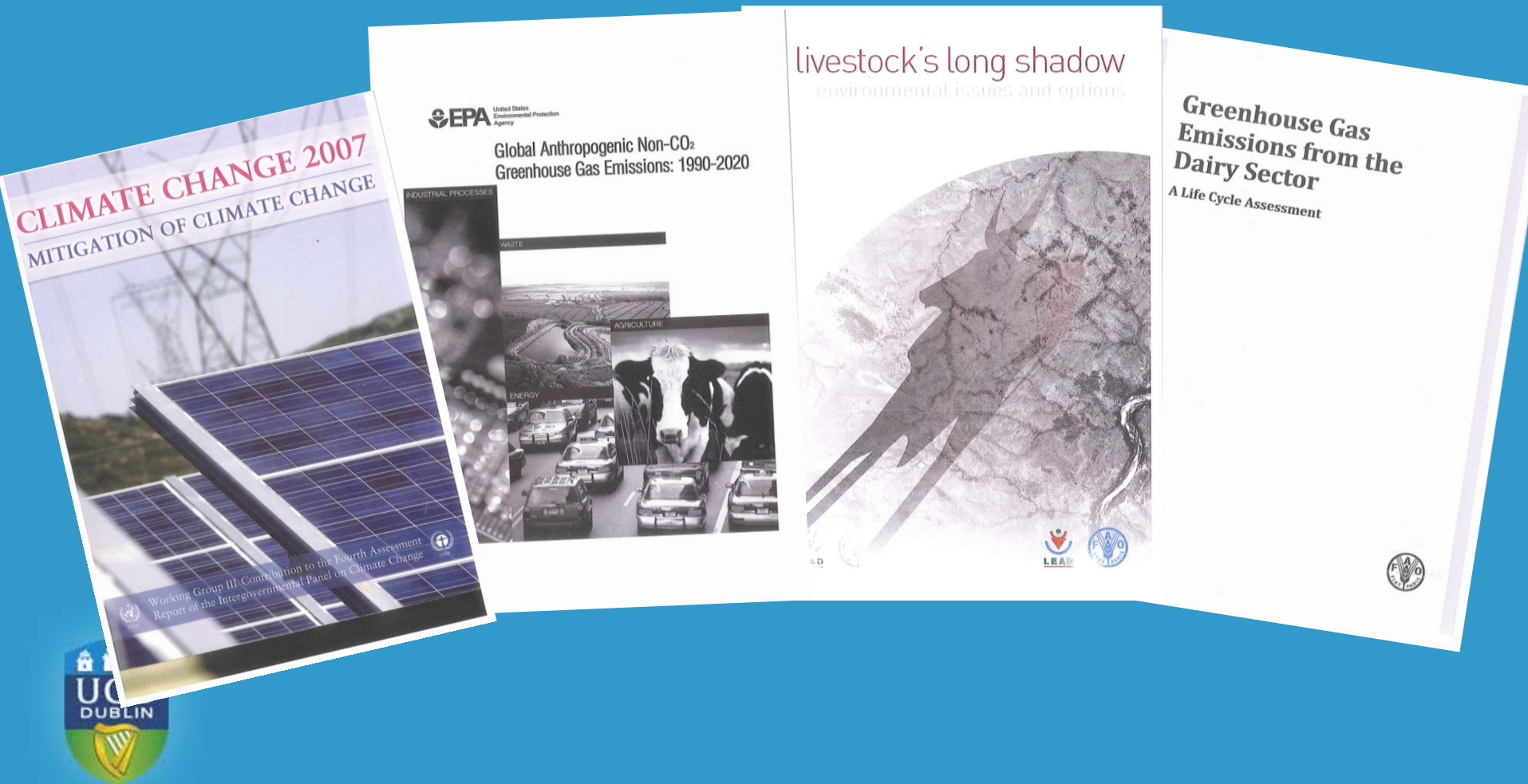
Greenhouse gas emission sources/removals and processes in managed ecosystems



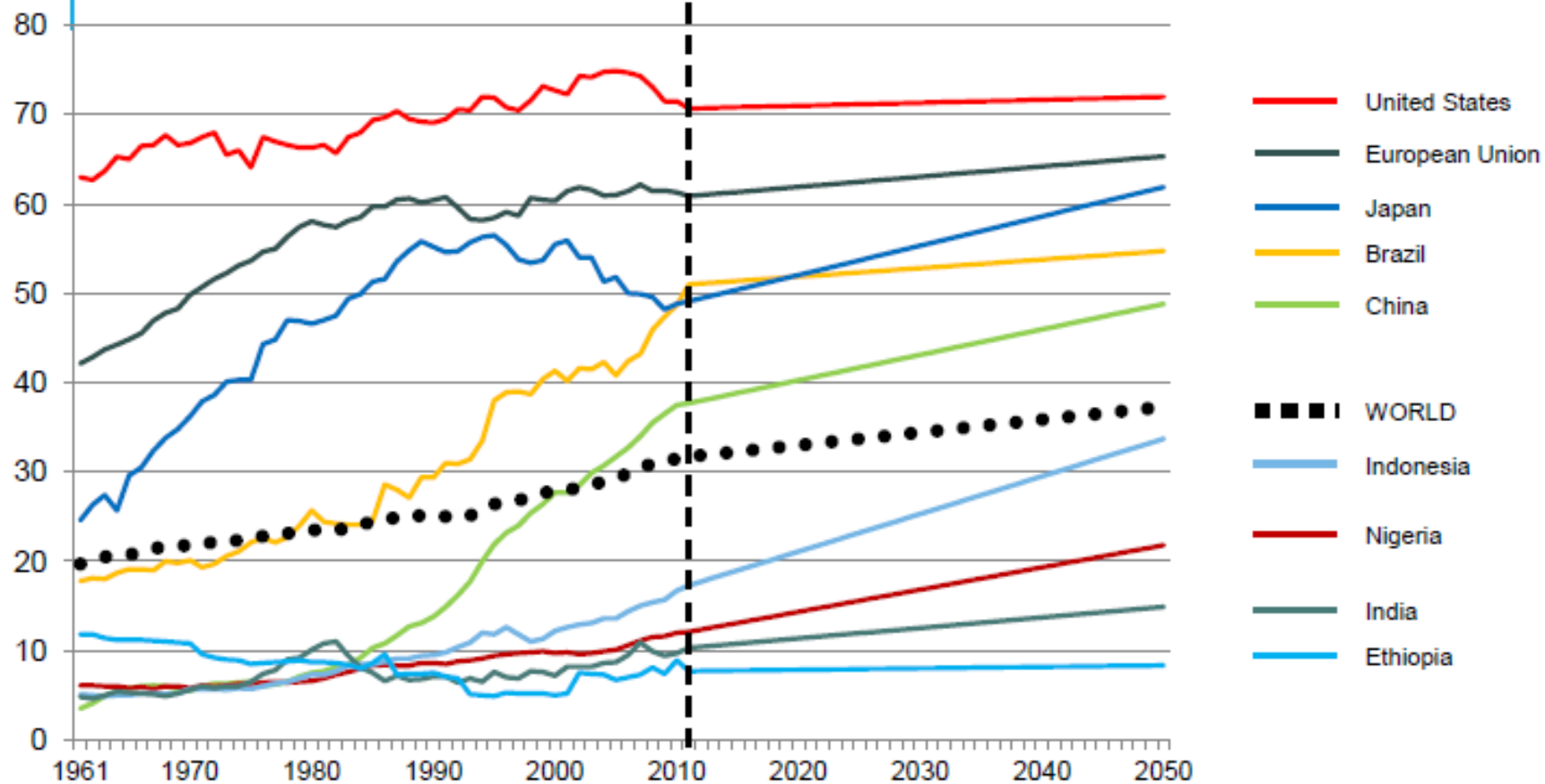
NMVOC = non-methane volatile organic compounds.

Source: U.S. Department of Agriculture.

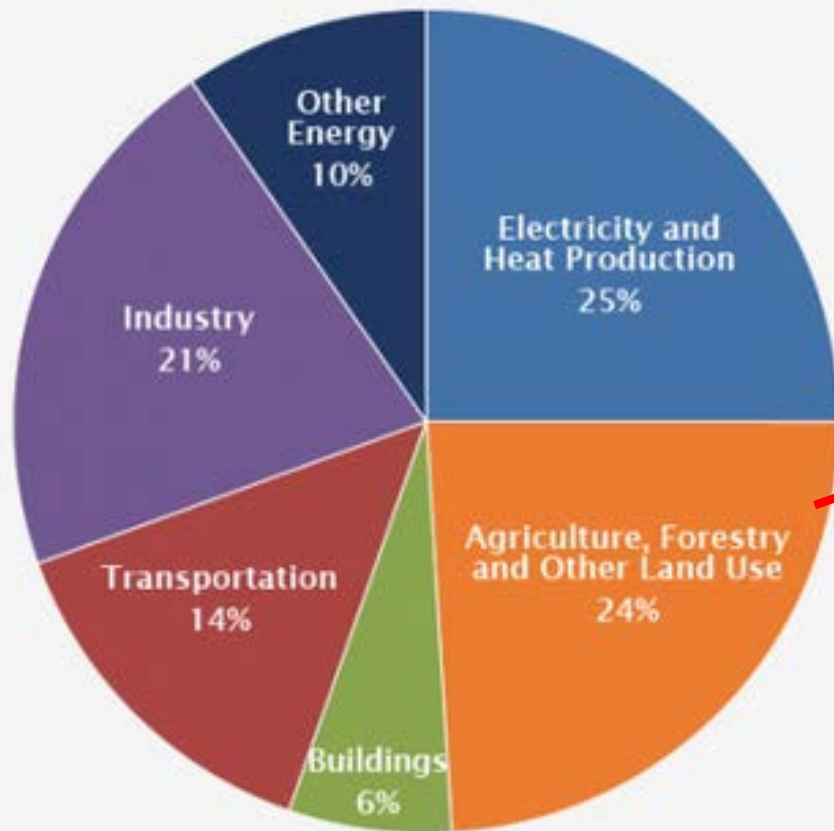
Global issue receiving huge attention from major organisations



TRENDS IN ANIMAL PRODUCT DEMAND

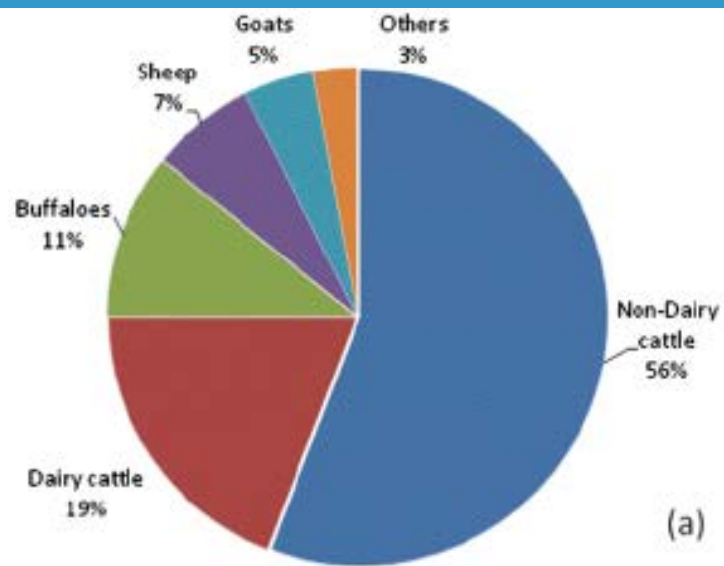


Global Greenhouse Gas Emissions by Economic Sector

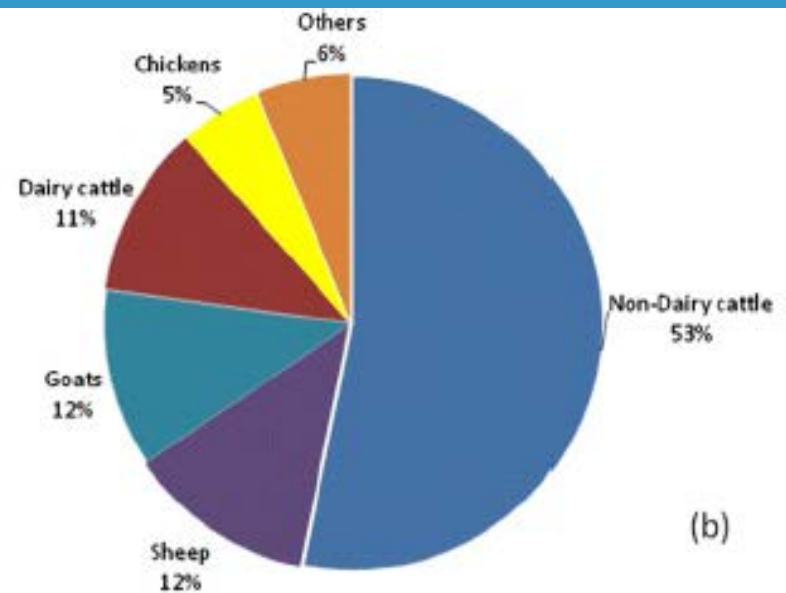


60% livestock related

Source: [IPCC \(2014\)](#); [Excel](#) based on global emissions from 2010. Details about the sources included in these estimates can be found in the [Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change](#). [Excel](#)



(a)



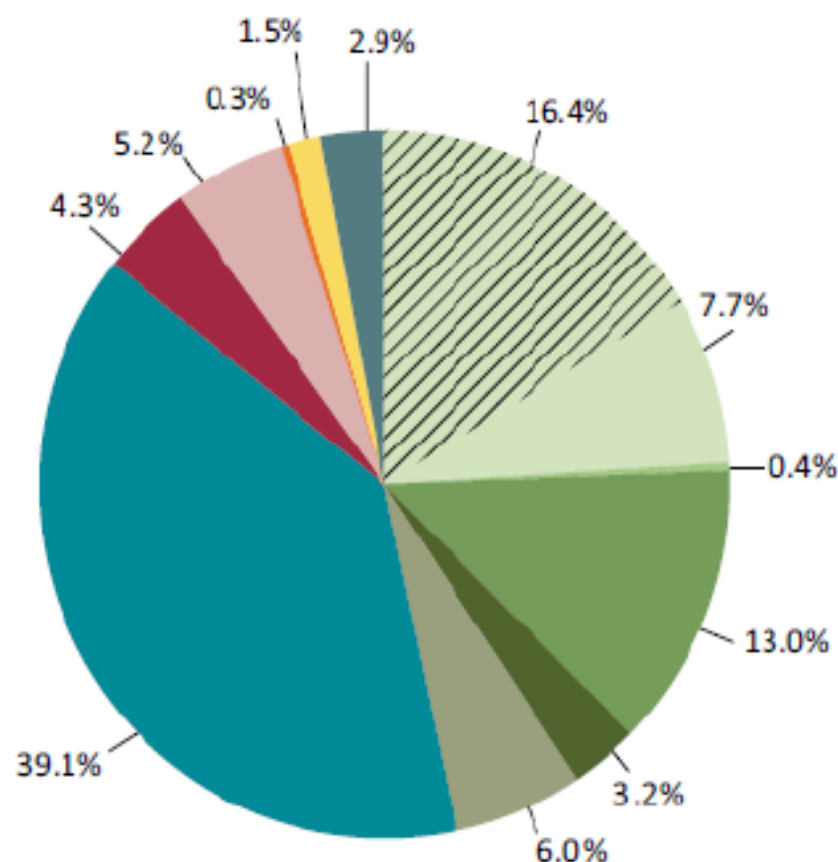
(b)

Figure 2. Break down of global emissions by animal type, averaged over the period 2000–2010, for (a) enteric fermentation; and (b) manure left on pasture.

GHG EMISSIONS FROM THE LIVESTOCK SECTOR

Relative contribution of life-cycle phases – global livestock sector

Total GHG emissions: 7.1 Gt CO₂-eq.



Applied & deposited manure, N₂O

Fertilizer & crop residues, N₂O

Feed: rice, CH₄

Feed, CO₂

LUC: soy, CO₂

LUC: pasture expansion, CO₂

Enteric, CH₄

Manure MMS, CH₄

Manure MMS, N₂O

Indirect energy, CO₂

Direct energy, CO₂

Postfarm, CO₂

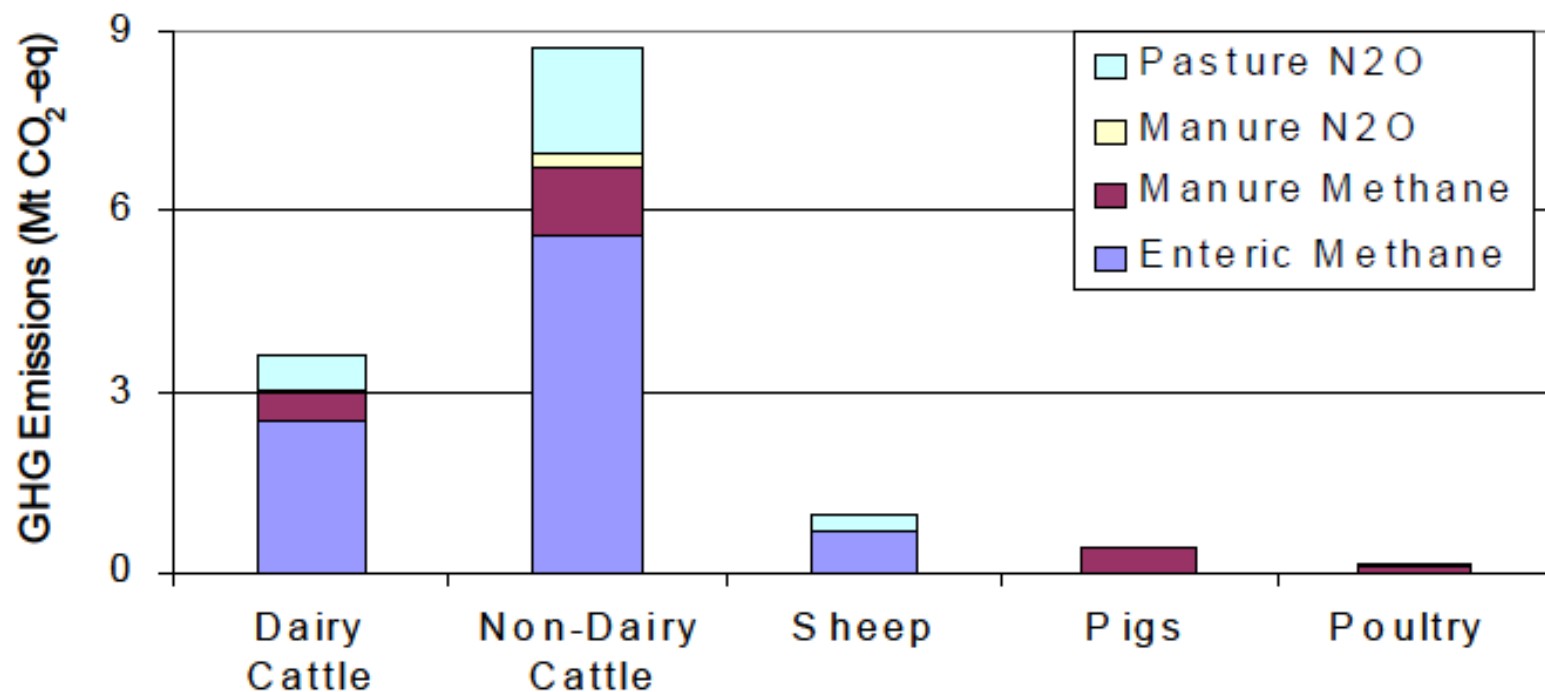
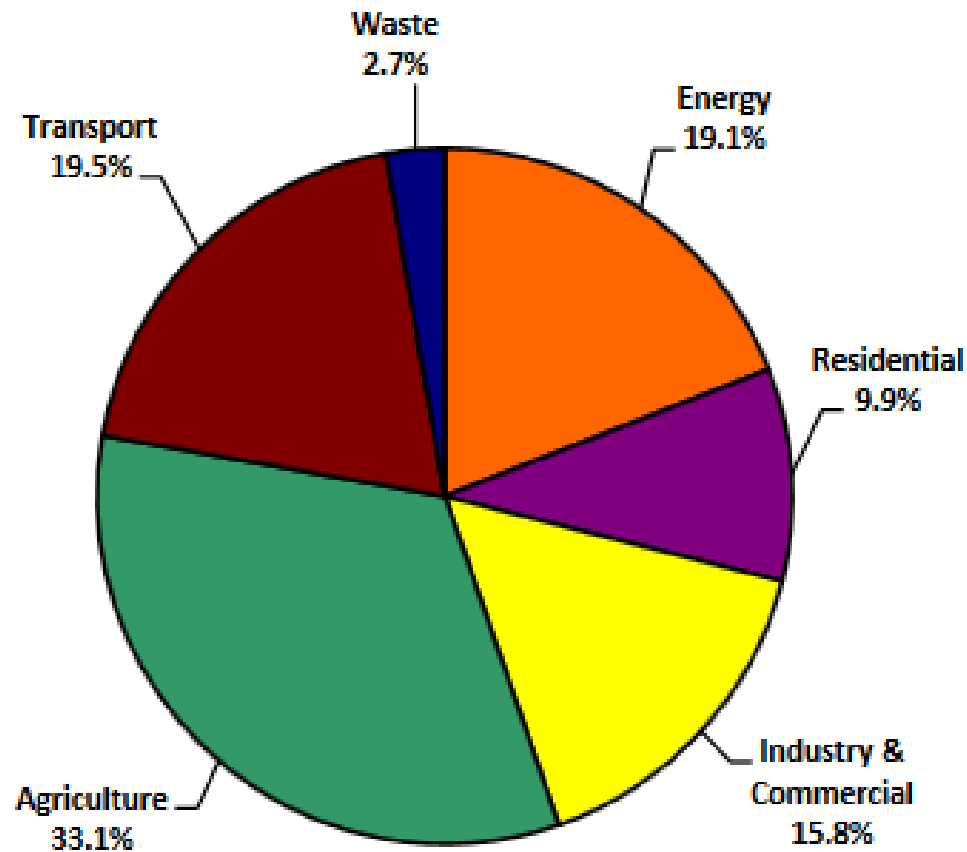


Figure 1: Sources of greenhouse gas emissions arising from livestock production in 2008 (McGettigan et al., 2010b).

2014



Energy

Residential

Industry & Commercial

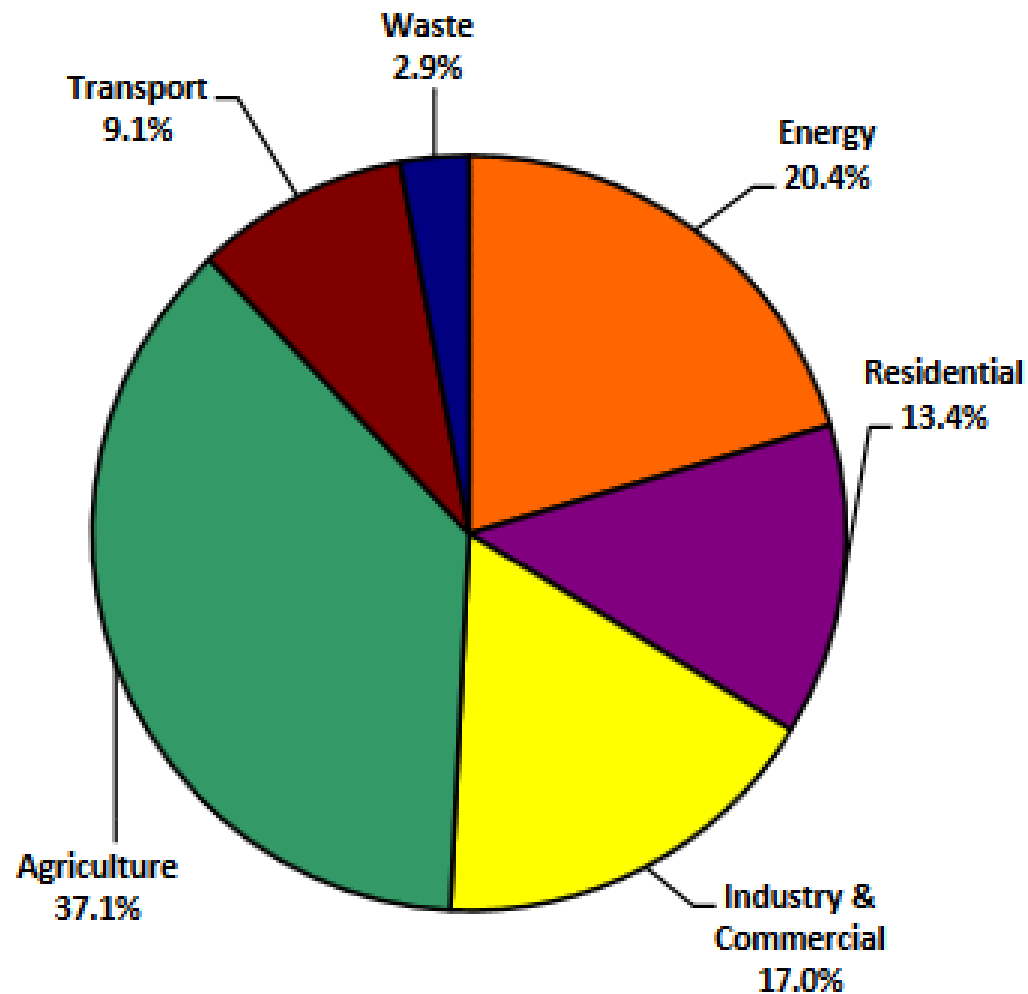
Agriculture

Transport

Waste

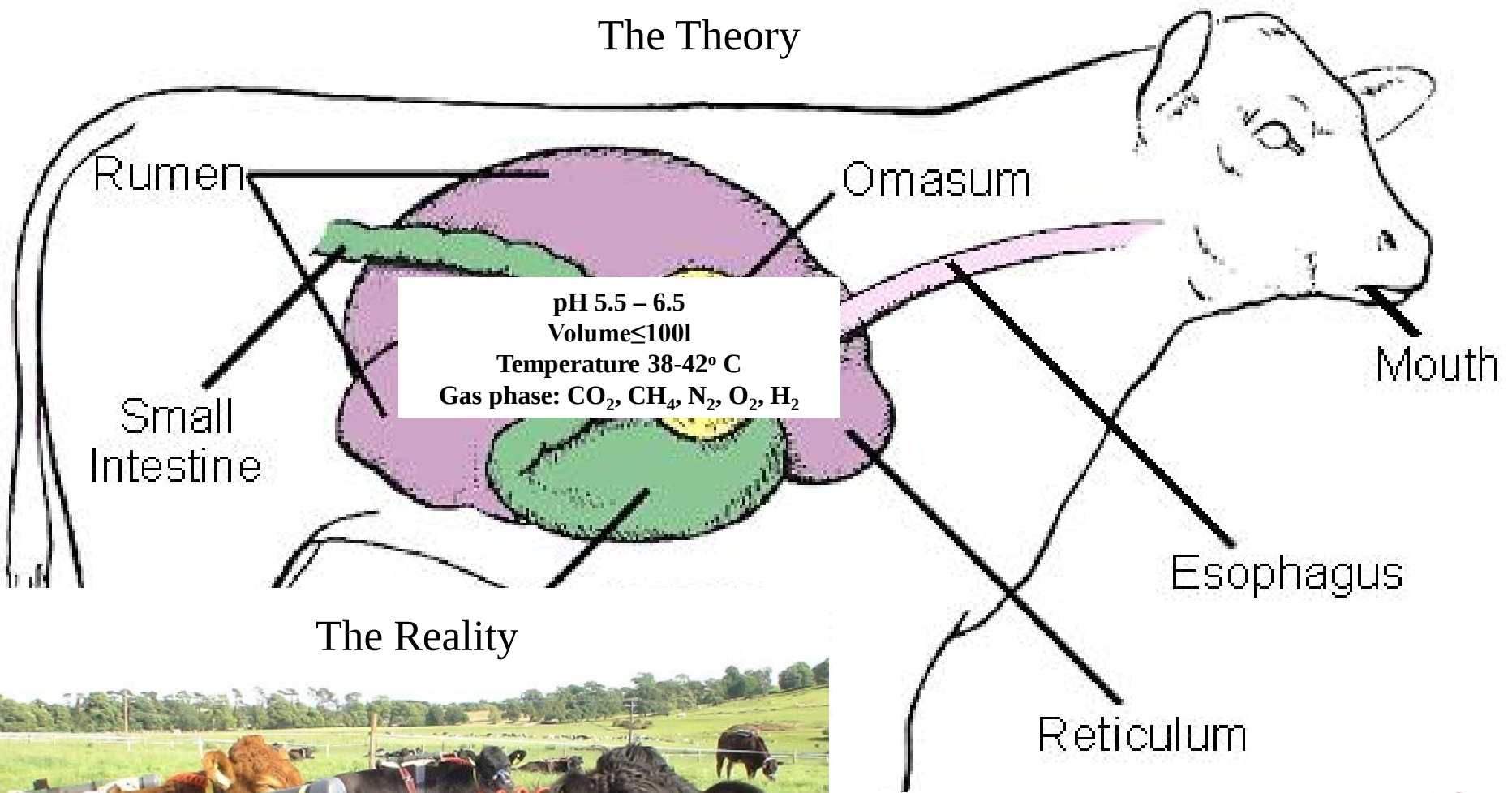


1990



- | | |
|---|--|
|  Energy |  Residential |
|  Industry & Commercial |  Agriculture |
|  Transport |  Waste |

The Theory



The Reality



The Mis-conception



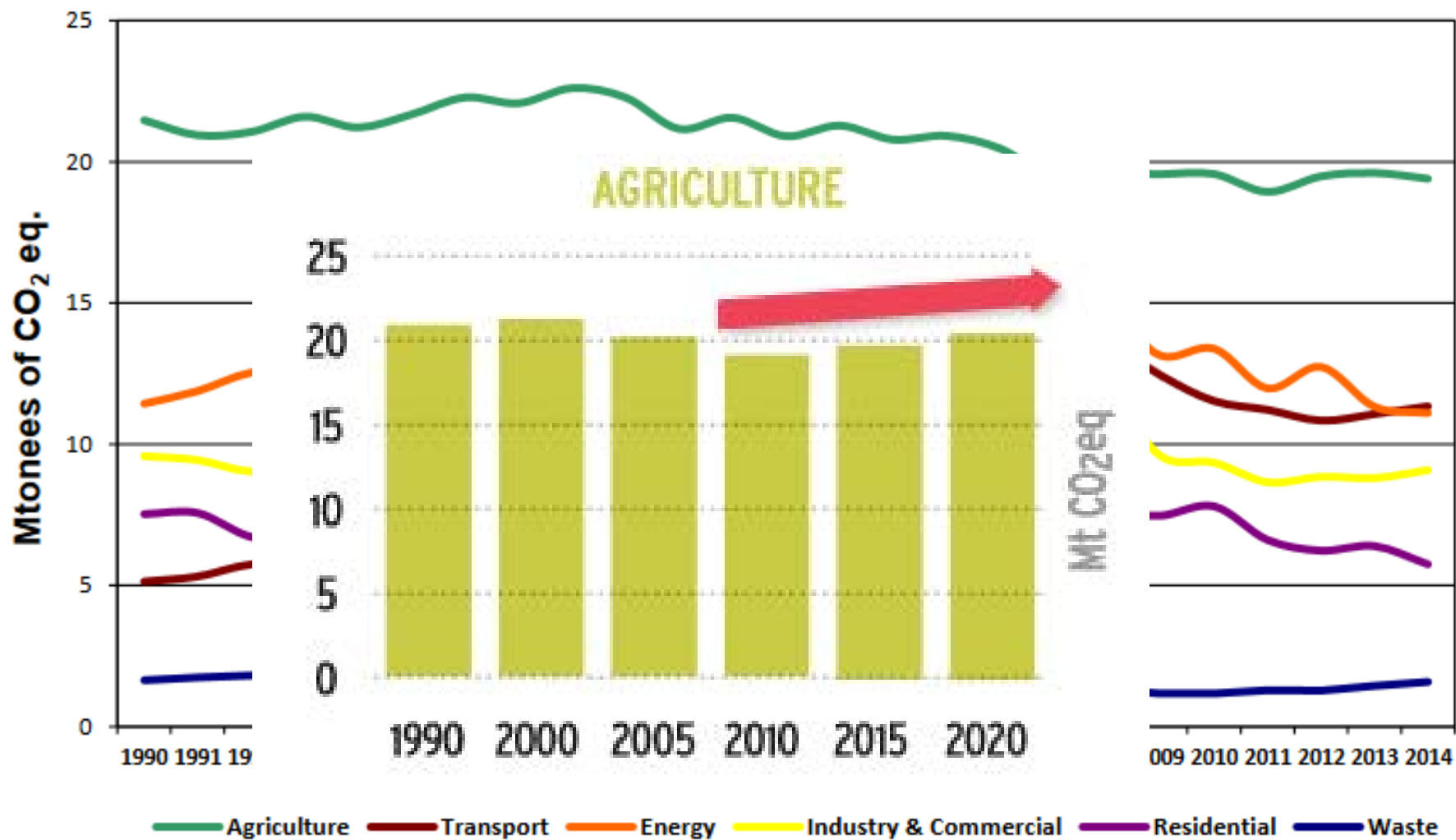
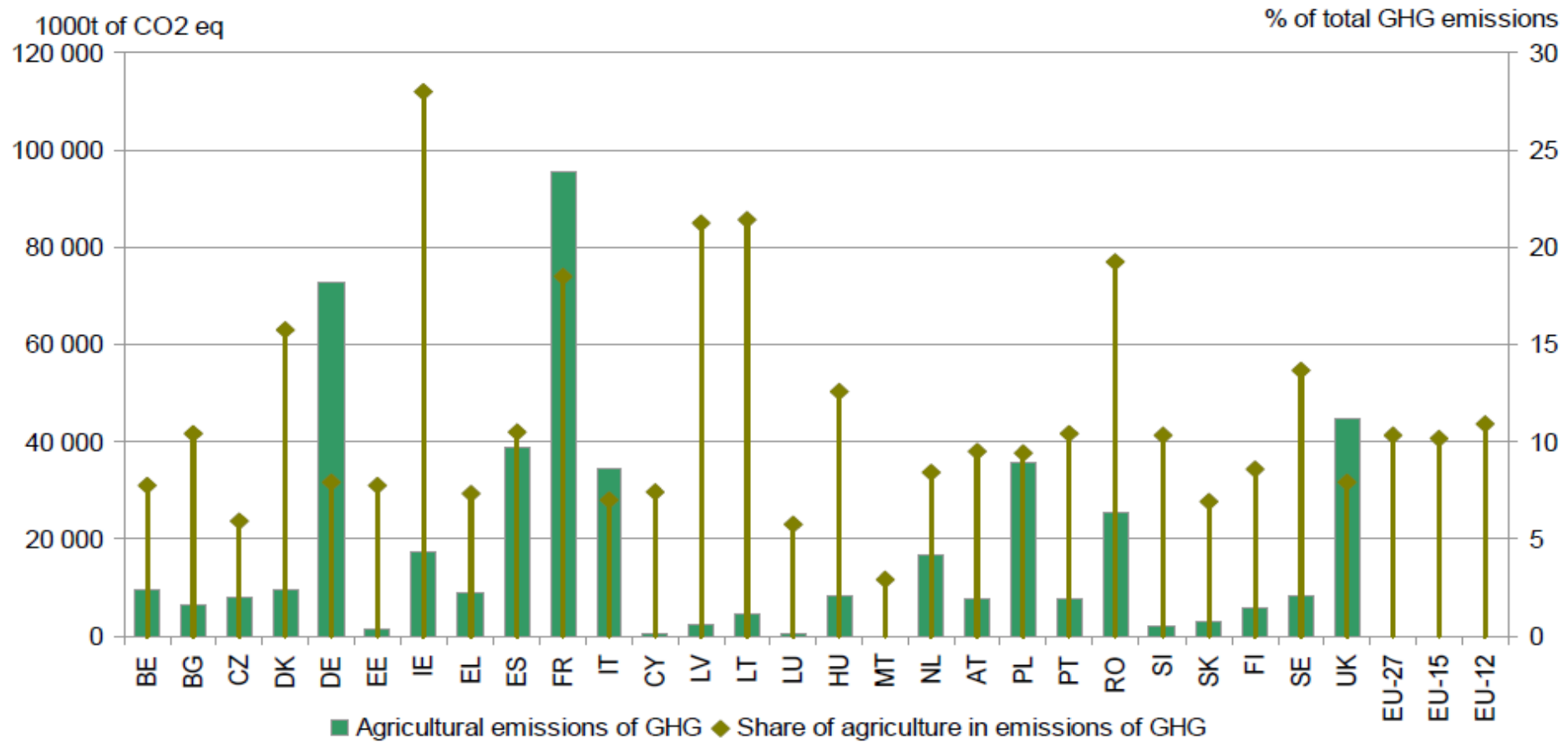
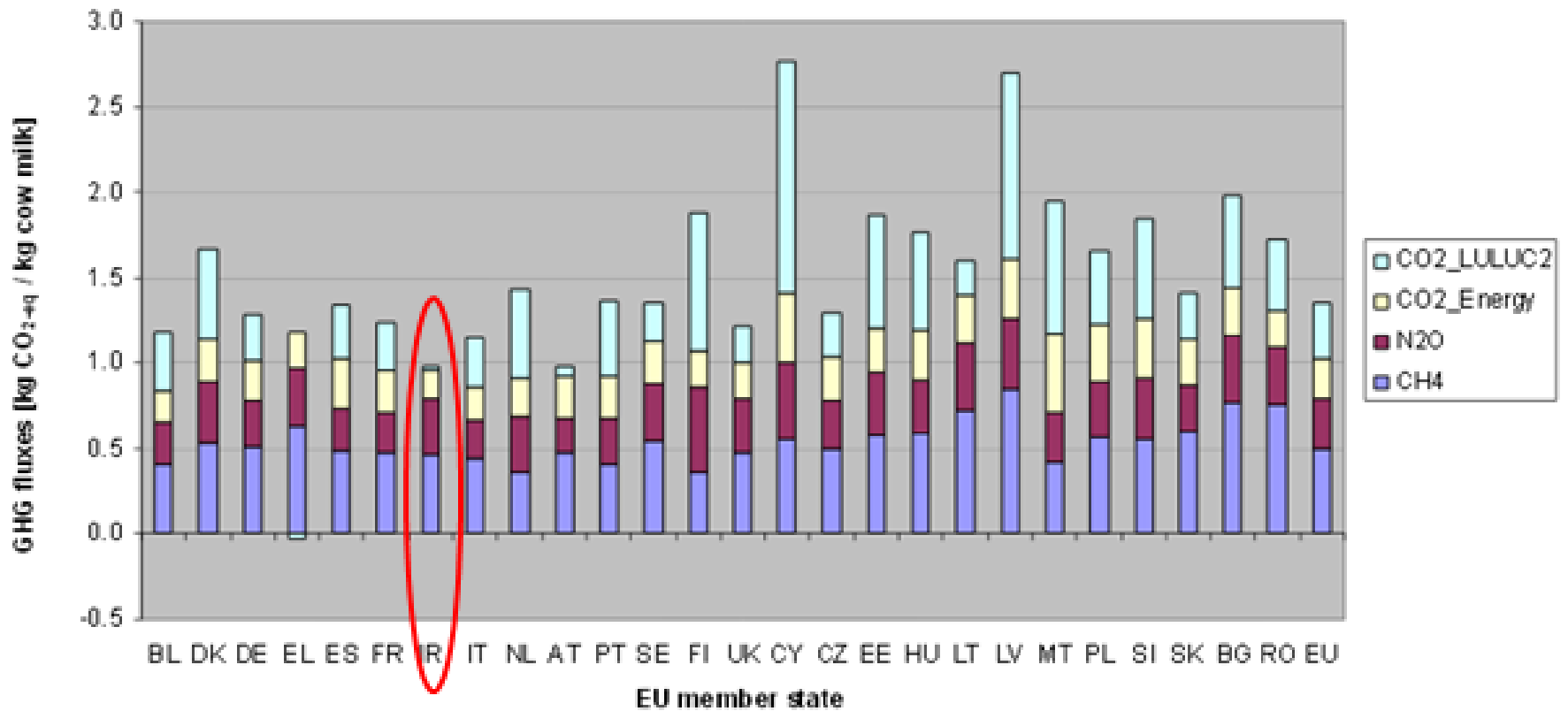


Figure 4 Trends in Greenhouse Gas Emissions 1990-2014

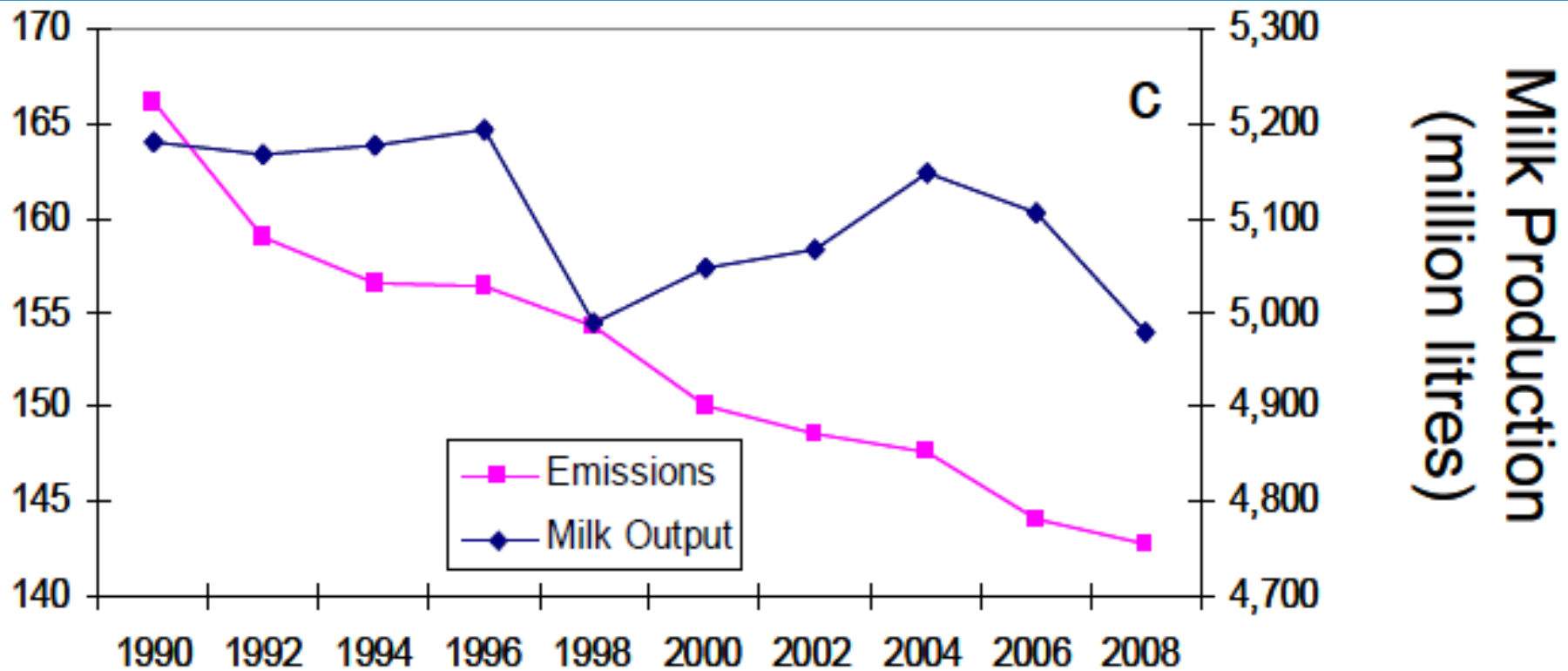
GHG emissions from agriculture, 2009



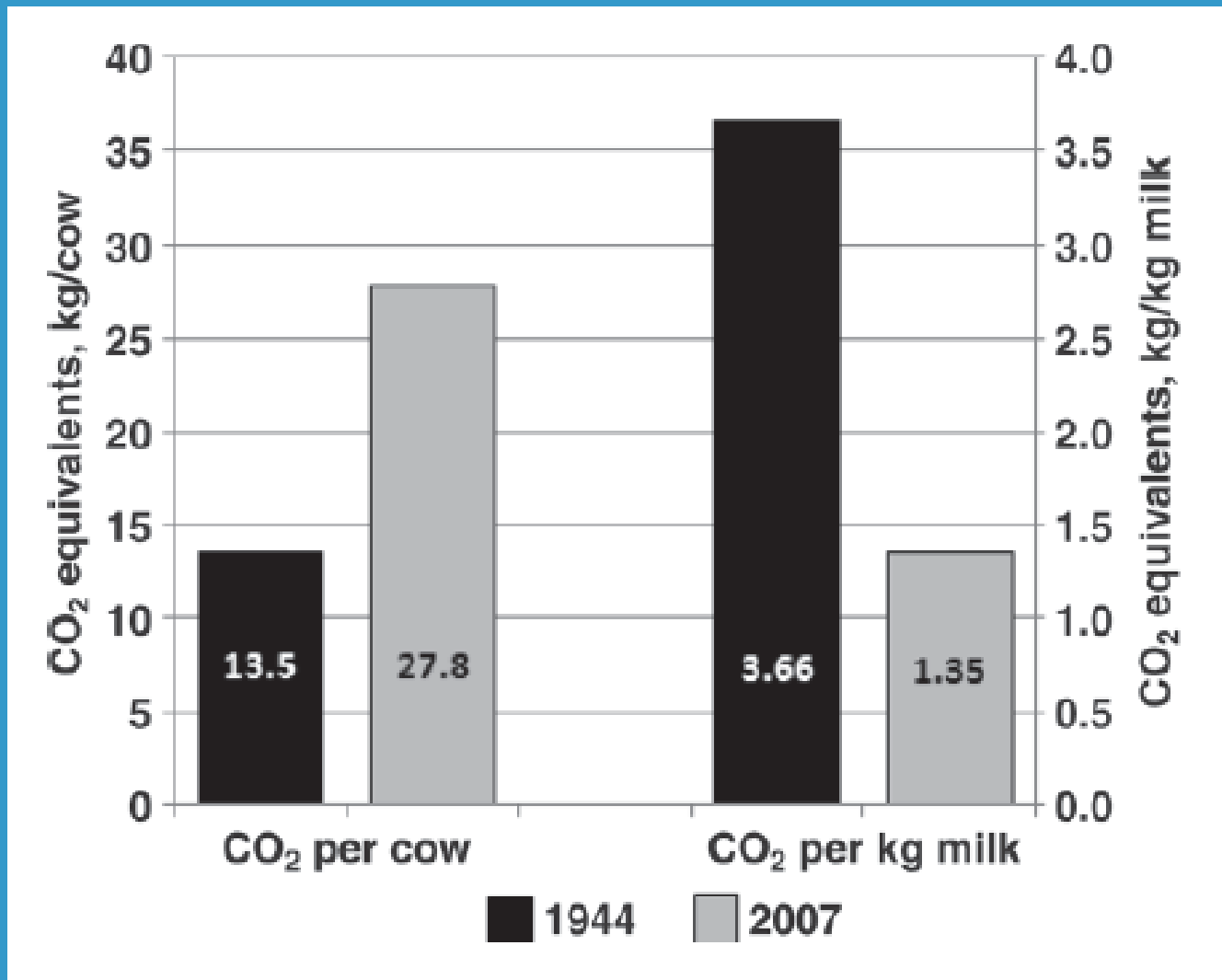
CO₂ equivalents per kg of milk within the EU

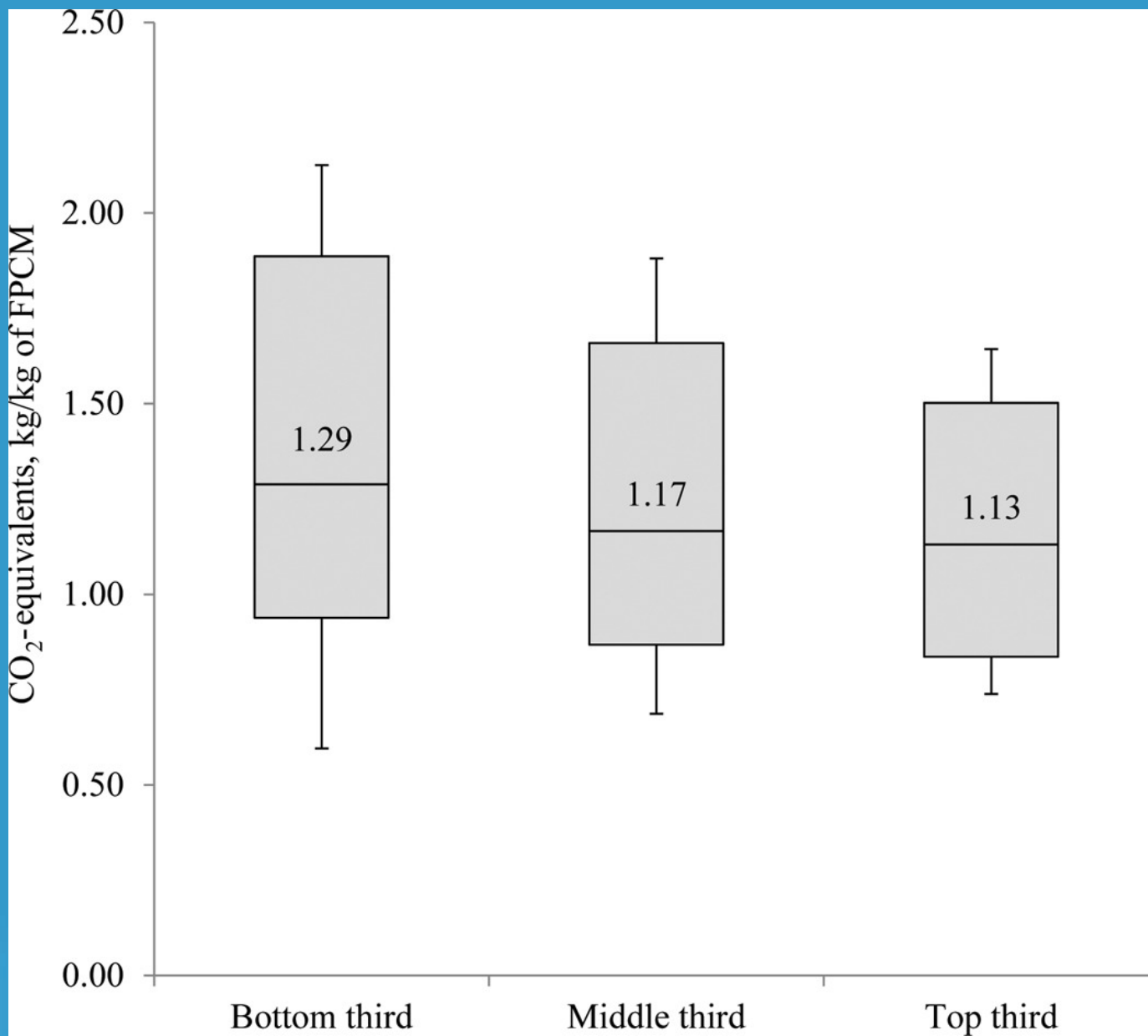


Output per unit product improving

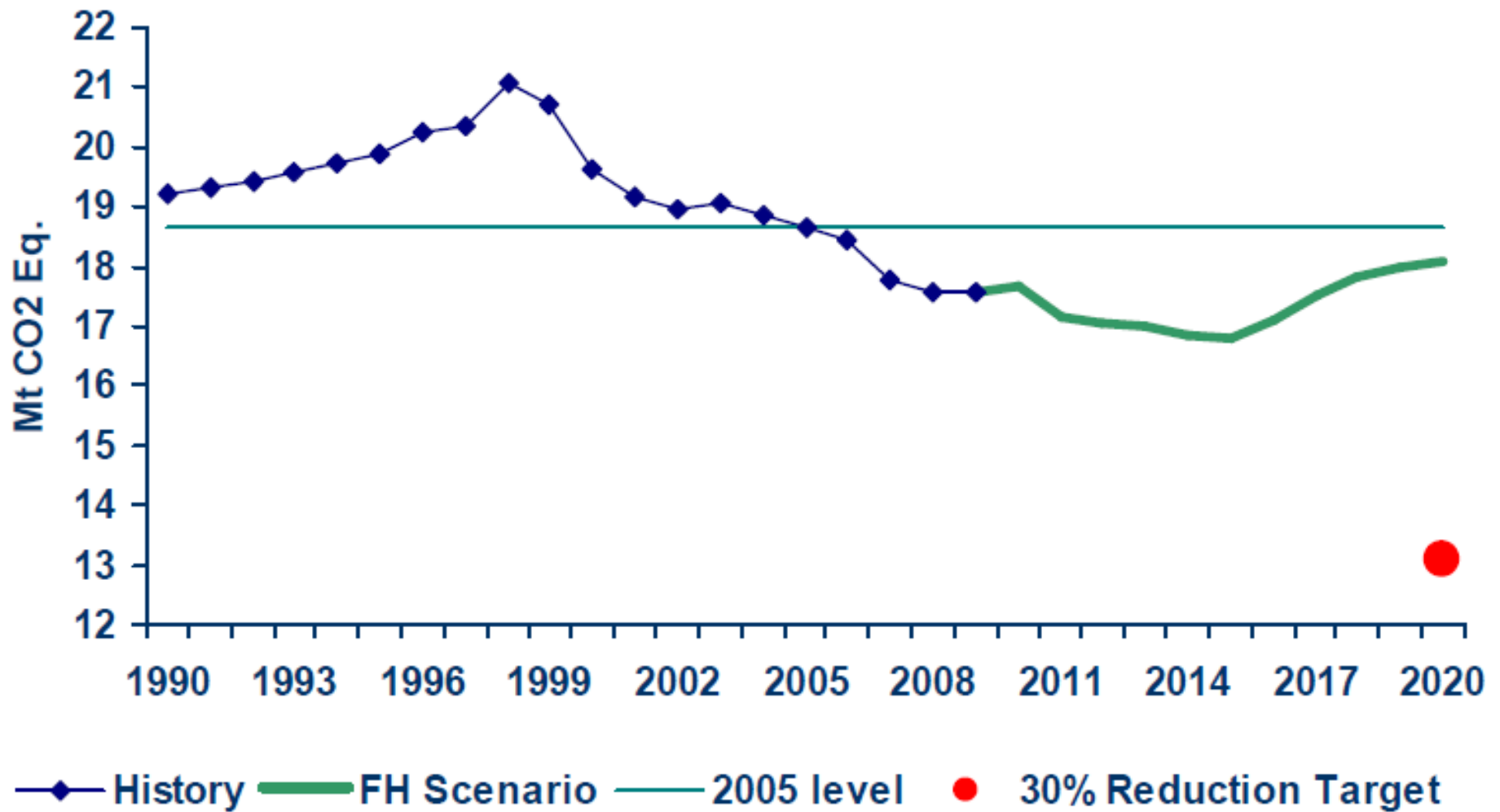


Increasing efficiency over time

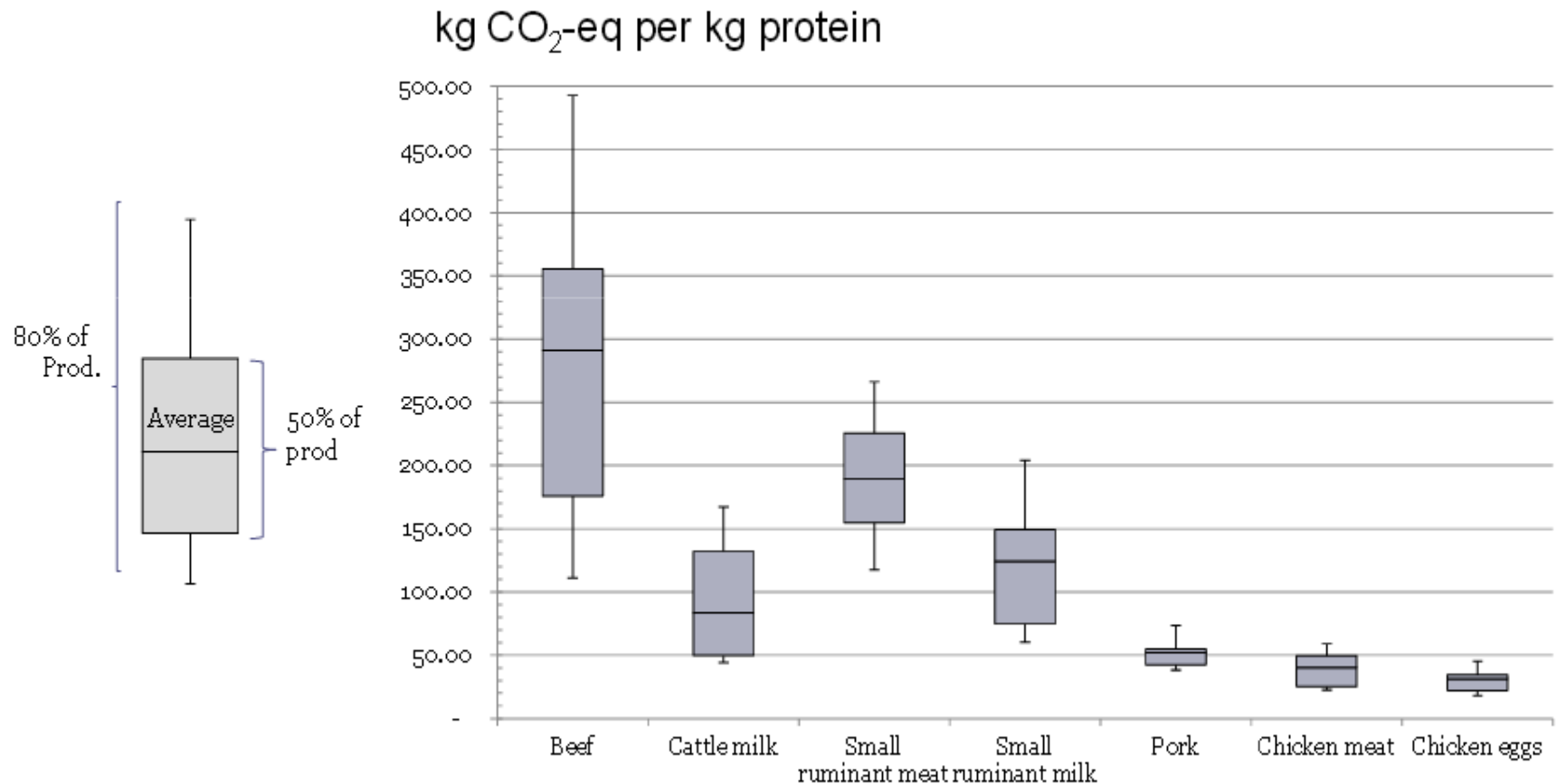




Future projections



Estimated global emission intensities (Ei)

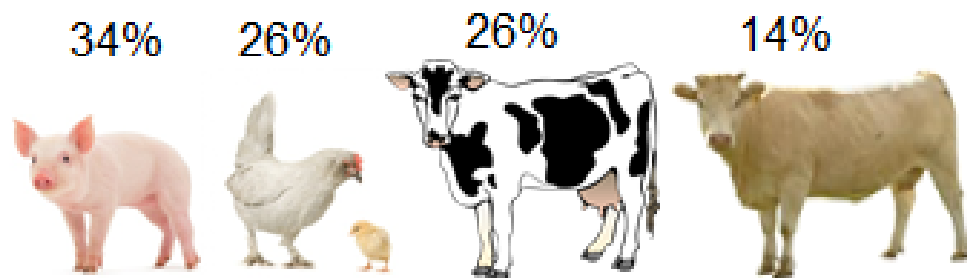


FAO 2013

Food-feed competition

2012–2013: 795 million tonnes cereals (1/3 total cereal) - animal feed

Of the total cereal use in livestock sector



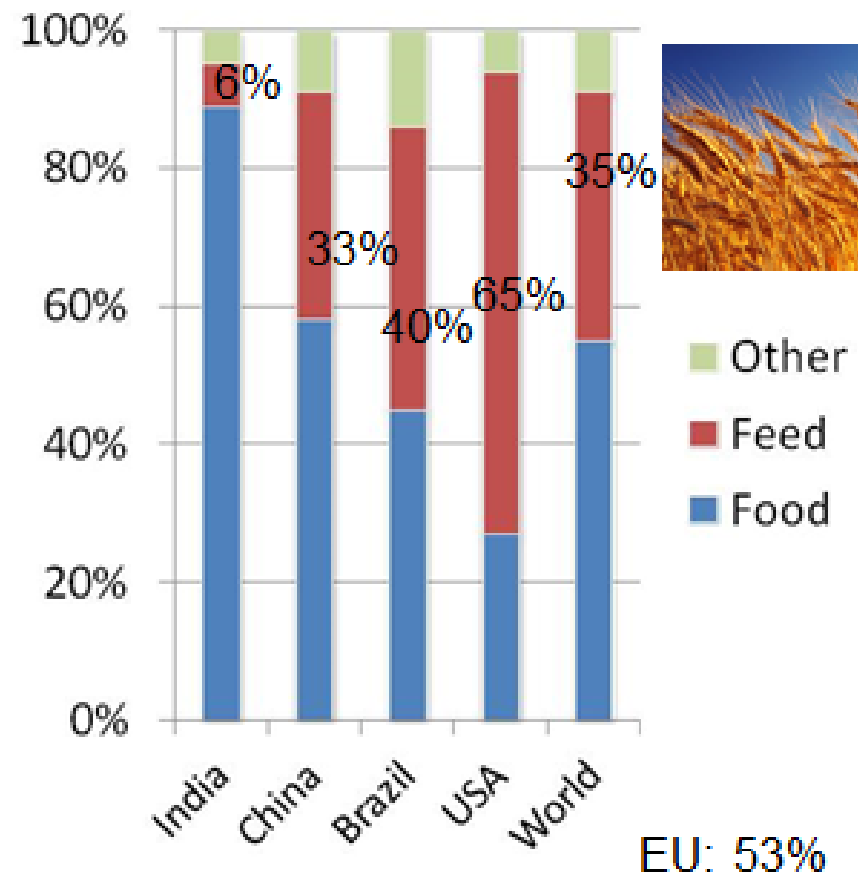
Cereal energy used for meat production,
if fed directly

meet

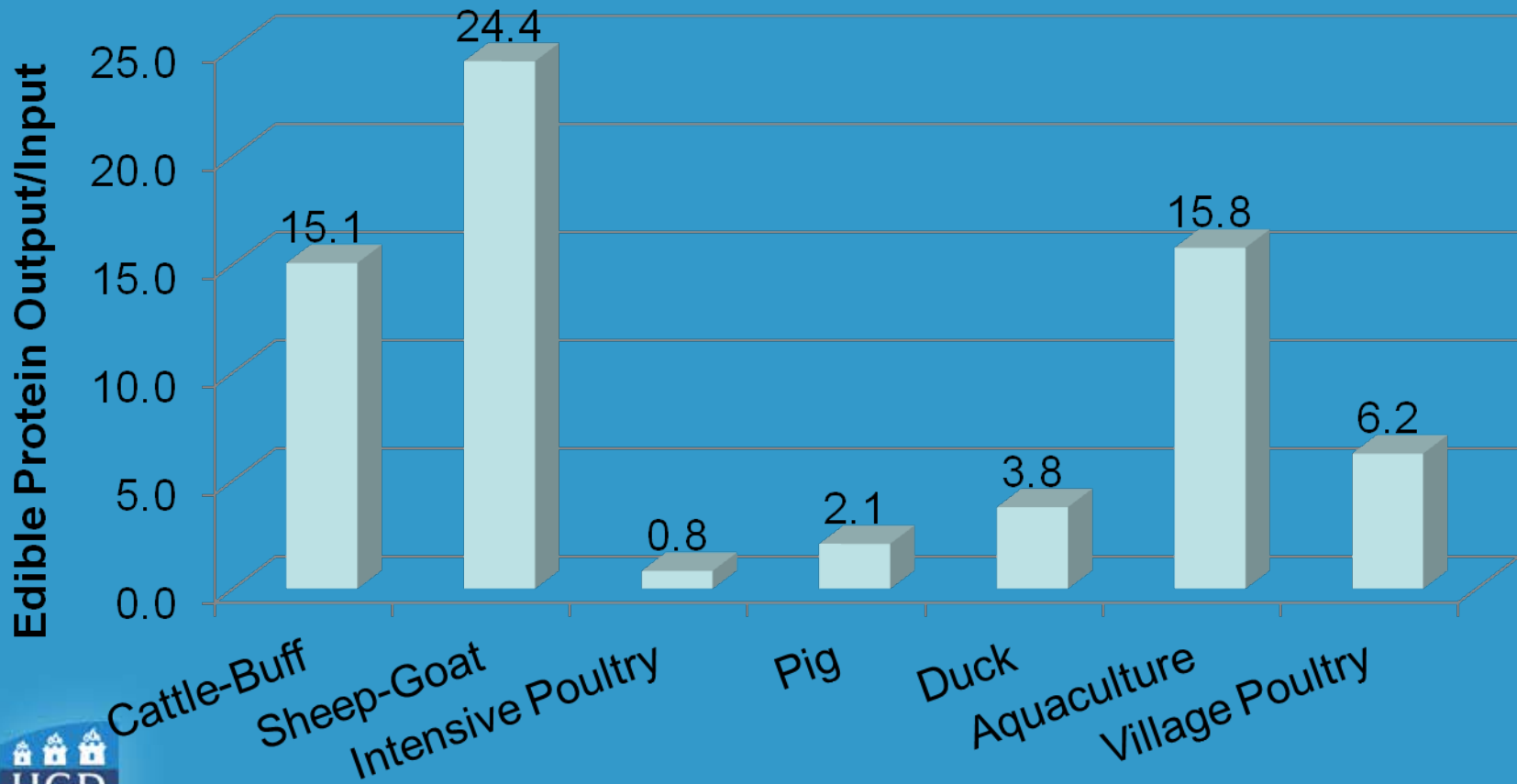


Annual calorie need of 3.5 billion people

Nellemann et al. (2009), UNEP



Human edible protein output-input ratio



Mean based on data from India, Pakistan, Bangladesh, Thailand, Bhutan, Mongolia from Makkar (2016).

Image Courtesy of William Morrison @Morrison Farming



Image courtesy @kylebroughlaunbeltie



Emissions reduction

- The animal
- The paddock
- The farm
- The system
- The chain





Thank you