UNIVERSITÀ DEGLI STUDI DI MILANO
DIPARTIMENTO DI SCIENZE AGRARIE E AMBIENTALI

# *Carbon footprint of the French-Italian beef production chain*

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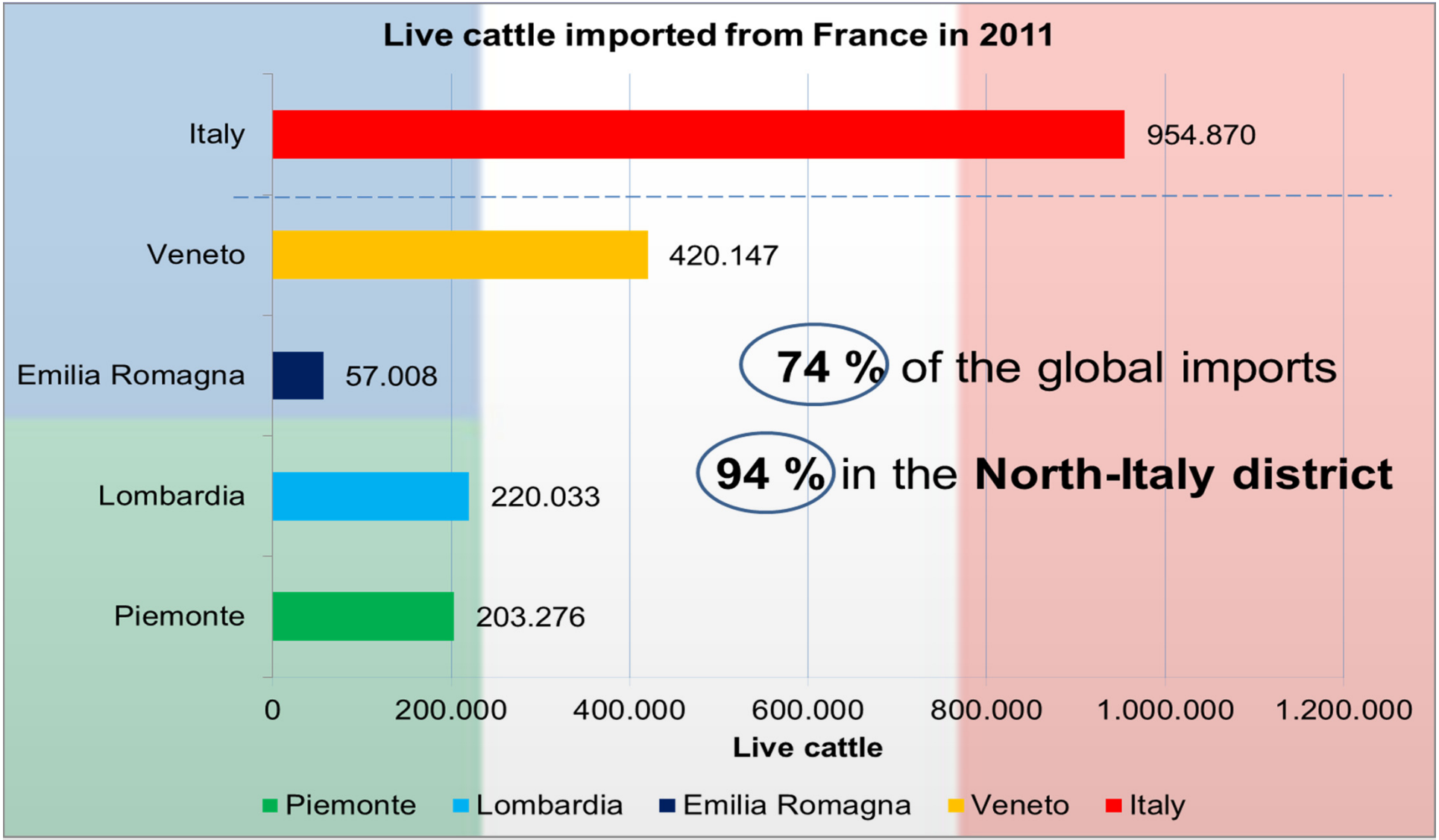
65th Annual Meeting of the European Federation of Animal Science , 25-29 August 2014 Copenaghen, Denmark
Wednesday 27th August 2014 Session 31. Competitiveness of European beef production

# The French - Italian beef production chain



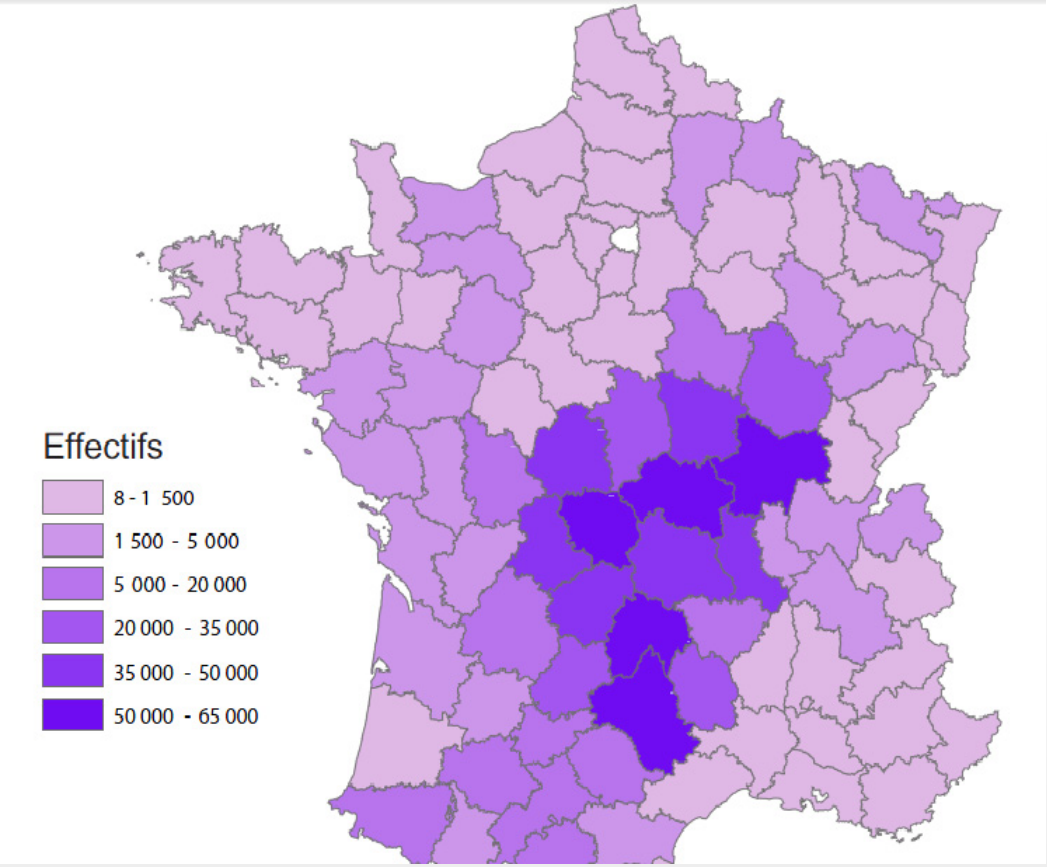
# Aim

To estimate

the whole carbon footprint

of the French – Italian beef production chain

# Materials and Methods




Cas type Atelier allattaint spécialisé

Région Bourguignone

race Charolaise en zone herbagère avec production de broutards repoussés

Institut de l'Elevage, 2013. Résultats 2011 des exploitations bovine viande. Synthèse Nationale des Réseaux d'Elevage, Juin 2013.

# Materials and Methods


10 Italian finishing farms

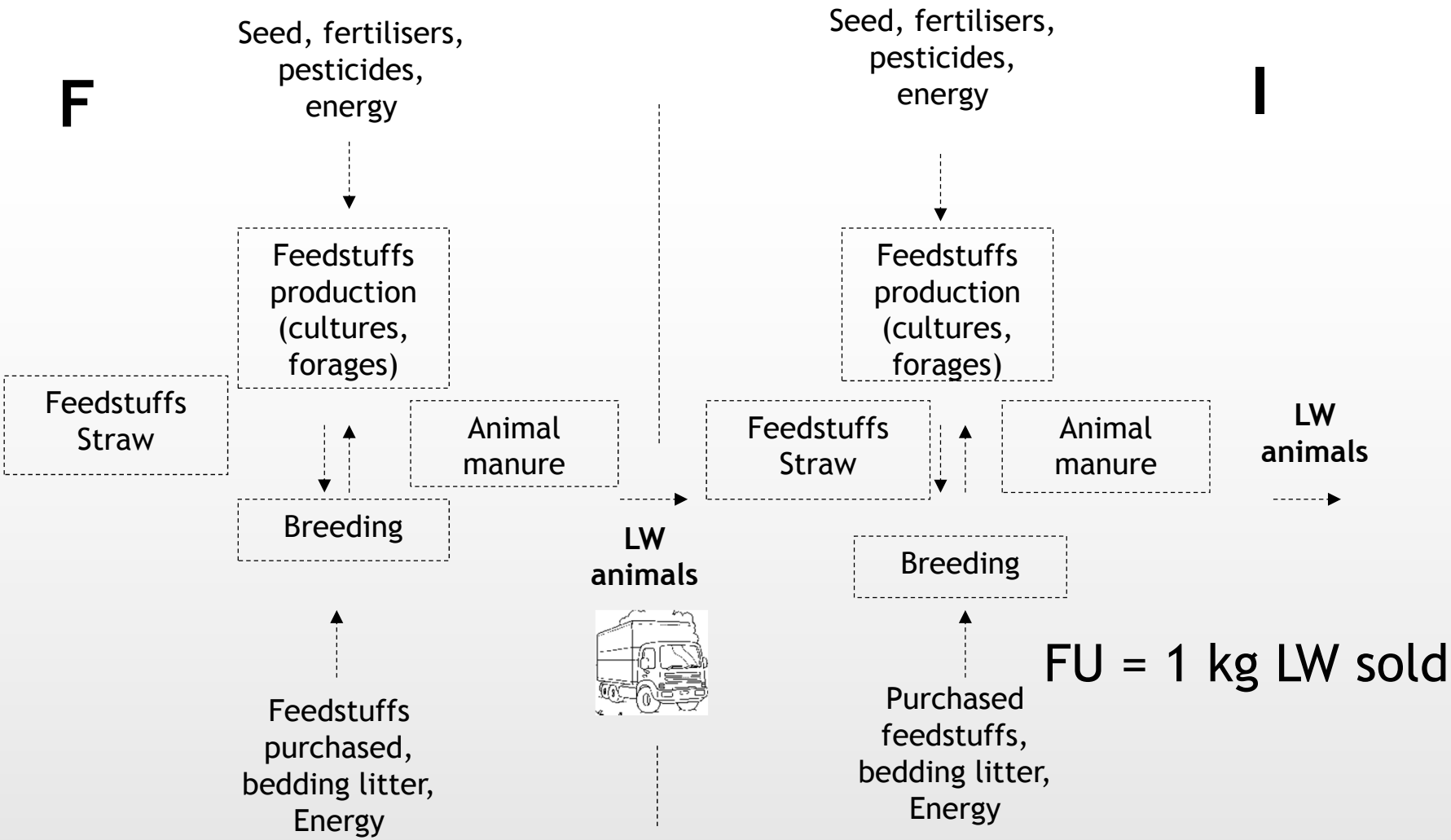
# Materials and Methods

| | F | I |
|---|---|---|
| UAA, ha | 100 | 67 |
| MFA, ha | 90 | 37 |
| MFA/UAA, % | 90 | 62 |
| Maize silage/MFA, % | 0 | 78 |
| LU, n | 116 | 223 |
| LU/ha, n | 1,16 | 4,87 |
| Turnover rate, % | 21 | - |
| Young bulls sold, no | - | 626 |
| Finished animals LW, kg/head | 410 | 670 |
| LW production, kg/head | 362 | 305 |
| Production cycle, d | 345 | 221 |
| ADG, kg/head/d | 1,05 | 1,38 |
| Sale price, €/head | 667 | 1.779 |

# Materials and Methods

| | F | I |
|---|---|---|
| Concentrate purchased, kg/kg LW | 1.52 | 1.58 |
| CP, g/kg DM | 124.0 | 139.7 |
| N intake, kg/head/year | 65.0 | 75.9 |
| N excretion, kg/head/year | 54.0 | 62.3 |
| Surface applied N, kg/head/year | | 42.3 |
| MIPAF, 2006 Nitrate Directive | Kg/head/year | Kg/t LW/year |
| Young bulls 400 kg LW | 33.6 | 84.0 |

# Materials and Methods

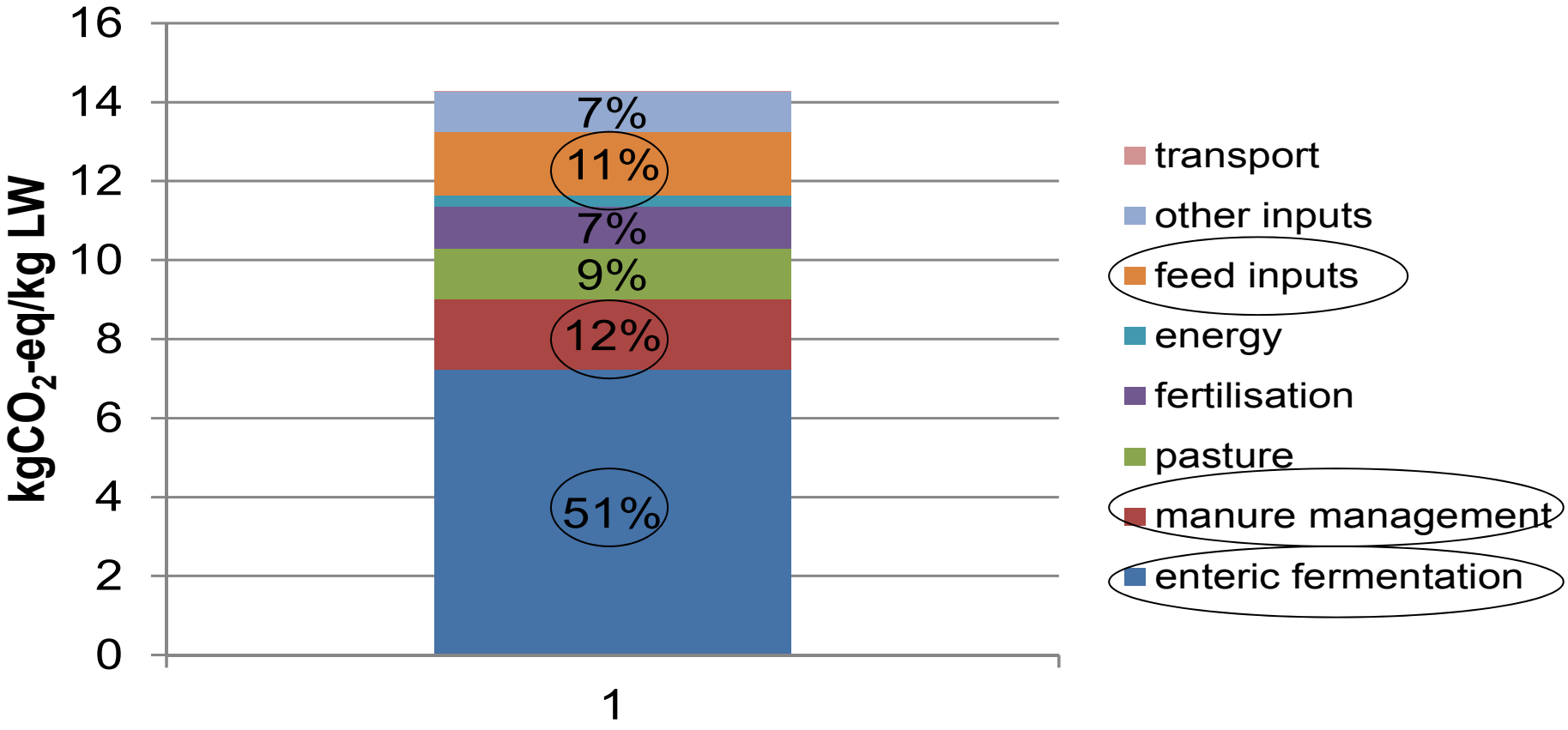


# Materials and Methods

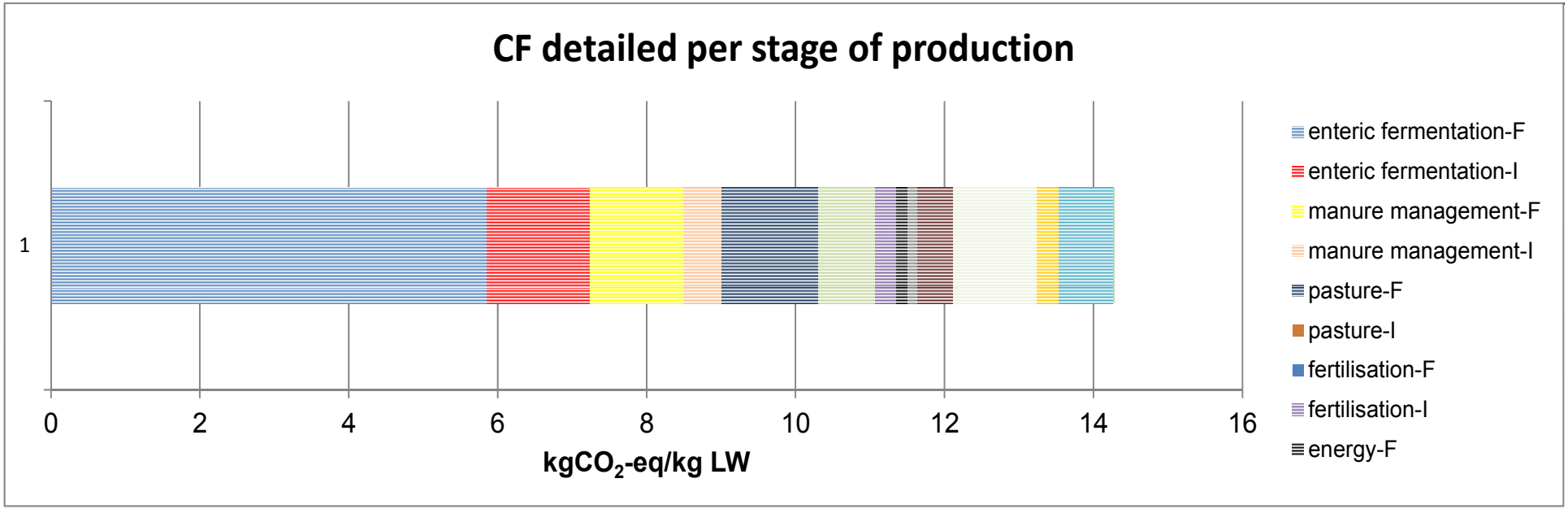
| | F | I |
|---|---|---|
| *$CH_4$ emissions* | | |
| Enteric | Equation 10.21 (IPCC, 2006) | |
| GE content per feed | INRA, 2007 | Schiemann, 1988 |
| Manure | Equation 10.23 – 10.24 (IPCC, 2006) | |
| *$N_2O$ emissions* | | |
| N excretion | Equation 10.31 (IPCC, 2006) | |
| N retention | CORPEN, 2001 | ERM/AB-DLO, 1999 |
| Manure | Equation 10.28 and 10.29 (IPCC, 2006) | |
| Soil, direct | Equation 11.2 (IPCC, 2006) | |
| Soil, indirect | Equation 11.11 (IPCC, 2006) | |
| *$CO_2$ emissions* | | |
| Animal transport | Blonk et al., 2011 | |
| Farm inputs | Nemececk and Kagi, 2007; Agribalyse®;FeedPrint | |

# Results

## Contribution of the different emission sources to the whole CF



# Results




F

Enteric fermentation **41%**

Manure management **9%**

Pasture **9%**

**71 %**

I

Enteric fermentation **10%**

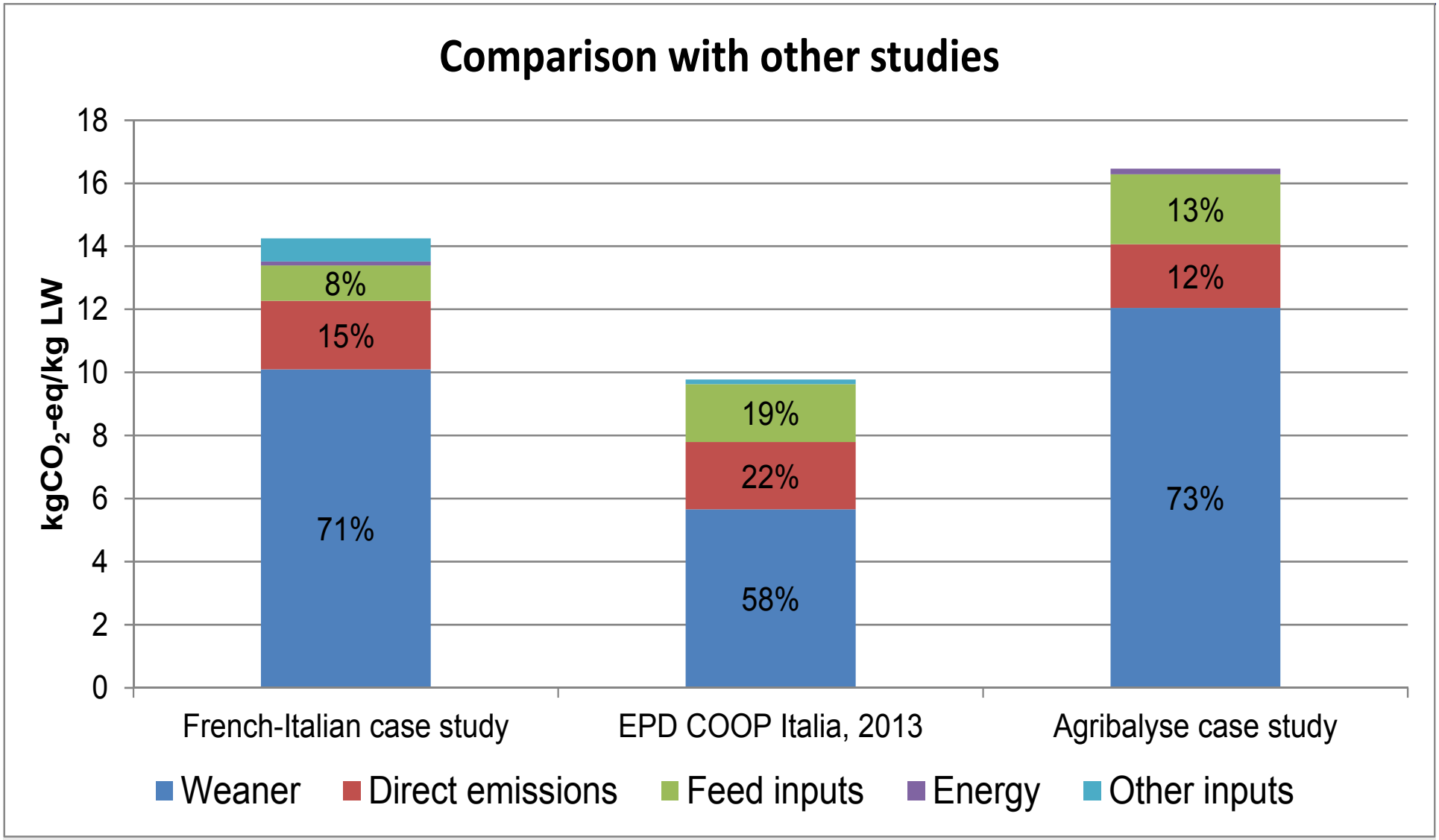
Feed inputs **8%**

Other inputs **5%**

**29 %**

**1 kg LW = 0.54 kg F + 0.46 kg I**

# Results


Comparison with other studies
kgCO2-eq/kg LW
18
16
14
12
10
8
6
4
2
0
8%
15%
71%
19%
22%
58%
13%
12%
73%
French-Italian case study
EPD COOP Italia, 2013
Agribalyse case study
Weaner
Direct emissions
Feed inputs
Energy
Other inputs

# Next step

- Estimating other impact categories such as acidification, eutrophication, resource use and land use;
- Estimating the environmental impact of the other main Italian beef production systems;
- Analysis of different scenarios: soybean meal substitution with alternative protein source such faba bean or pea

Thank you

for

your attention

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