

Session 66 : The current and future role of pasture production systems in the mitigation of and adaptation to climate change impacts in livestock farming systems



Carbon footprint of sheep farms in FR

Final results of the LIFE Green Sheep project

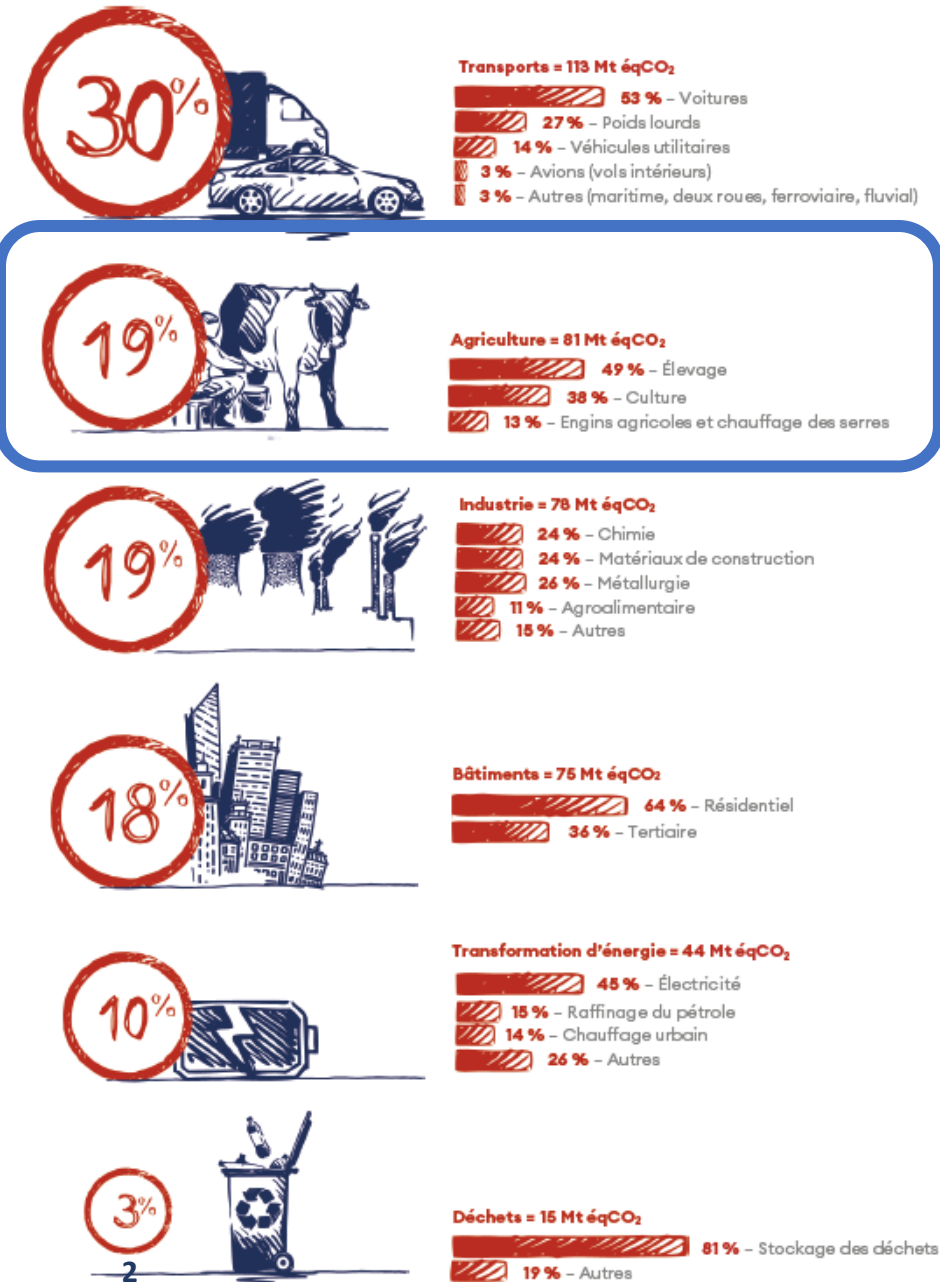
S. Throude, B. Rouillé, J.B. Dollé



Contribution of livestock systems in GHG emissions

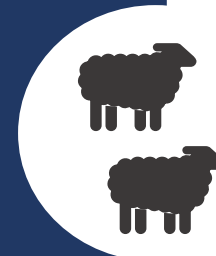
Secteurs émetteurs en 2021

Activités par secteur

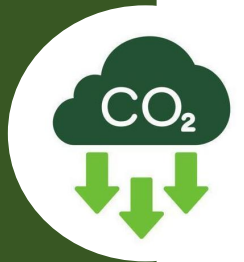


Livestock farming : 48% of Agriculture's emissions

In FR GHG, sheep farms represent less than 1%



Livestock farming : can compensate its GHG emissions



Especially for sheep farms that use mainly grass areas



How to assess the carbon footprint of sheep farms ?

Using the  tool based on LCA

Objectives of this tool :

- To assess the environmental performance of a farm
- To position itself in relation to references
- To act to improve its practices

2 levels of assessment : level 1 (simplified) & level 2 (detailed)

- **For this study : use of level 1**

CAP'2ER®

A tool that takes into account the positive contributions of the farm and its negative impacts for a whole environmental assessment.

POSITIVE CONTRIBUTIONS



ENVIRONMENTAL IMPACTS



Fossil fuels consumption

Water quality (Nitrogen, plant protection product)



Methodology



How to assess the carbon footprint of sheep farms ?



Using a large French farms sample from this project :

LIFE GREEN SHEEP IS:

5 years
European project,
from October 2020
to September 2025

€ 4,6 M
budget

1 355
demonstrative
farms involved

40 partners from
5 European countries

Reduce by **12 %**
GHG emissions while making
sure farms are sustainable

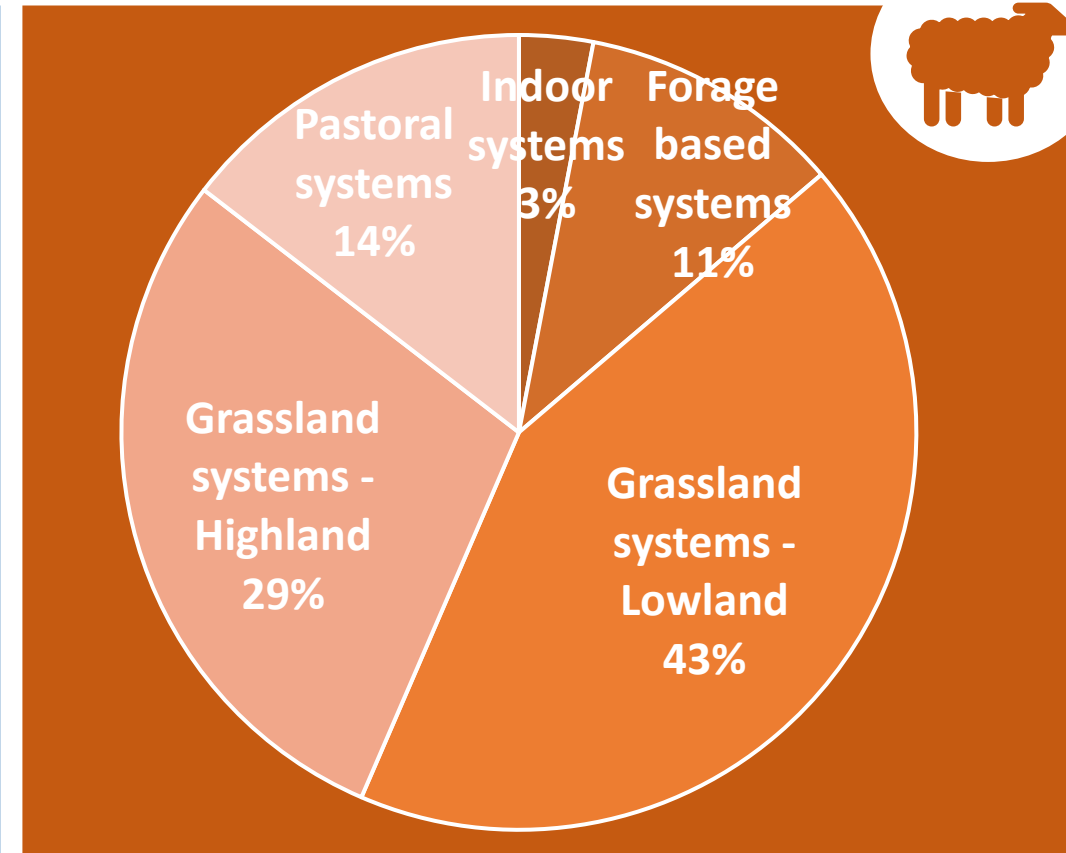
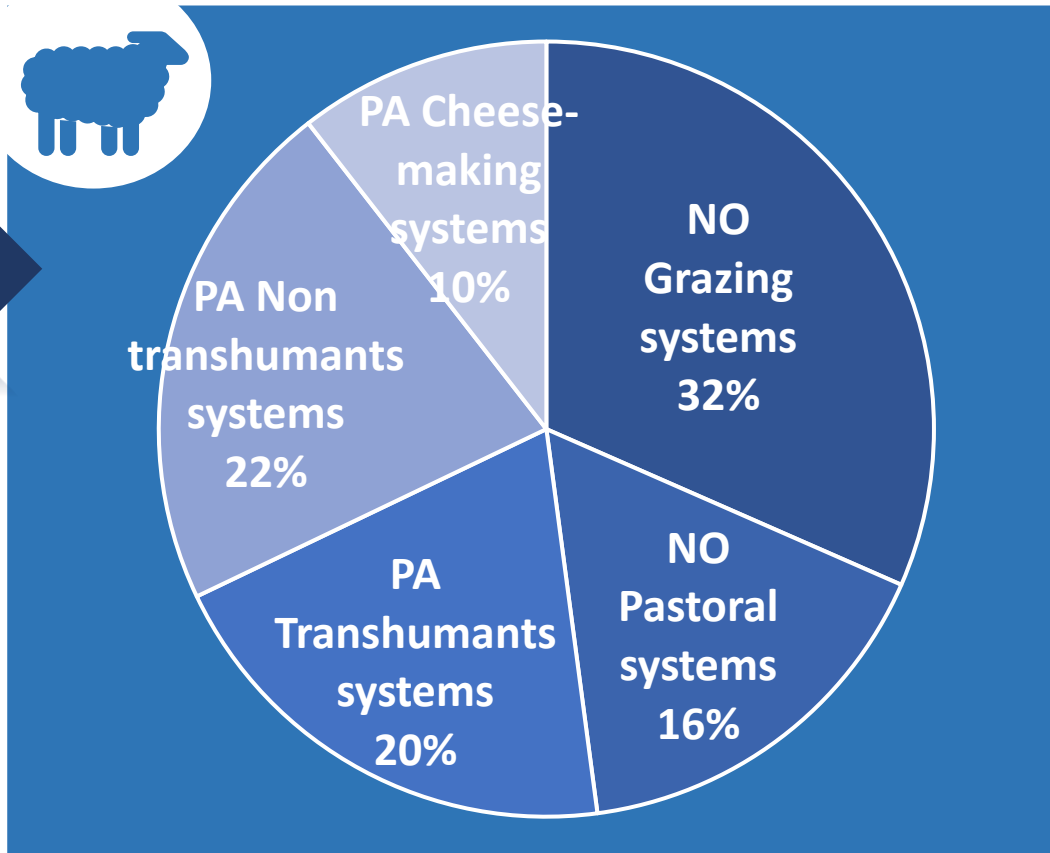
282
innovative farms
involved in the
implementation of
action levers



A important FR-scale sample with a diversity of rearing sheep systems (823)

191 French dairy sheep farms

632 French meat sheep farms

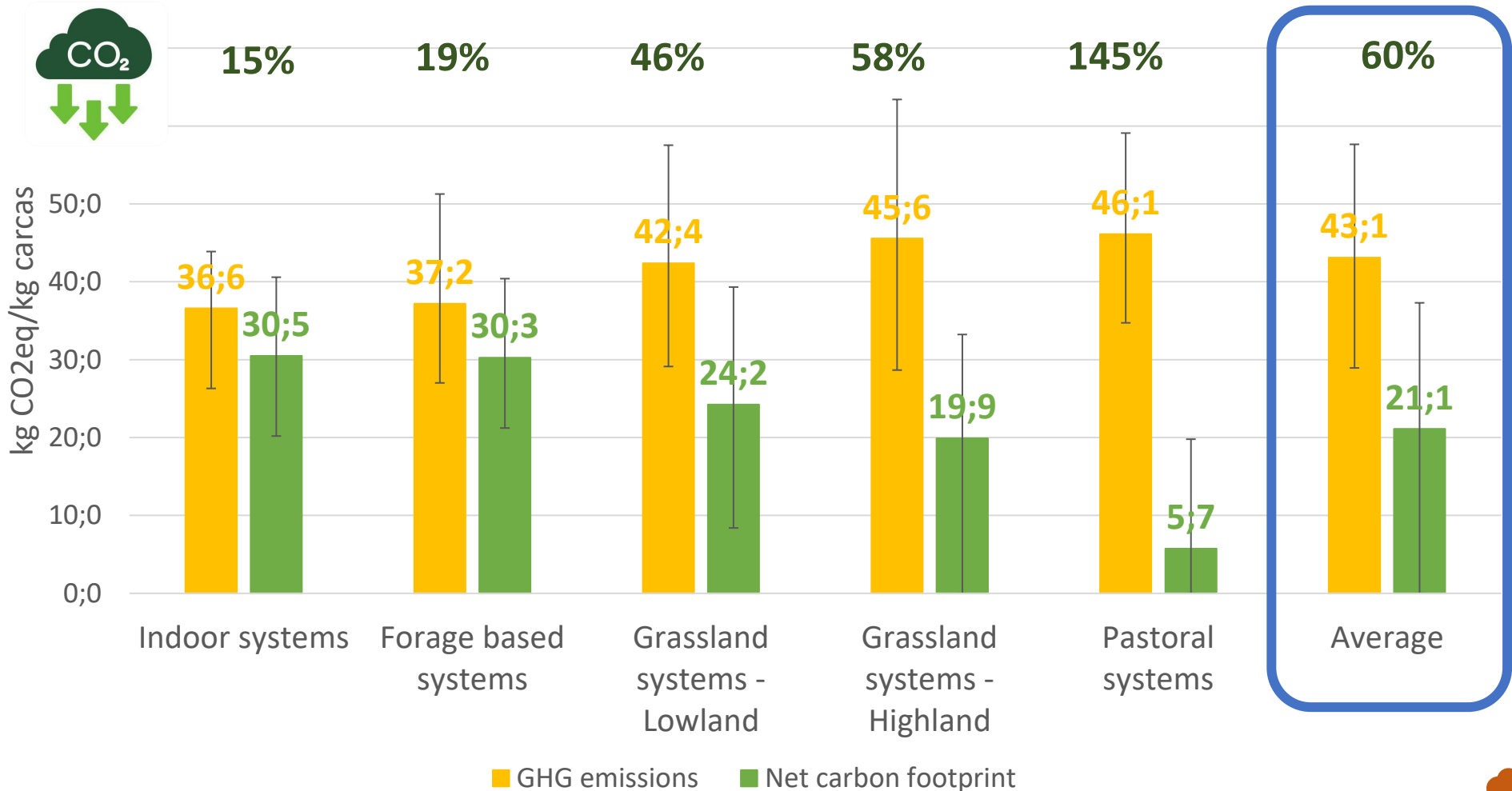


NO : Nord-Occitanie region / PA : Pyrénées-Atlantiques region

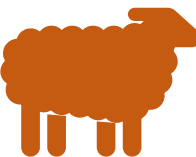
Results



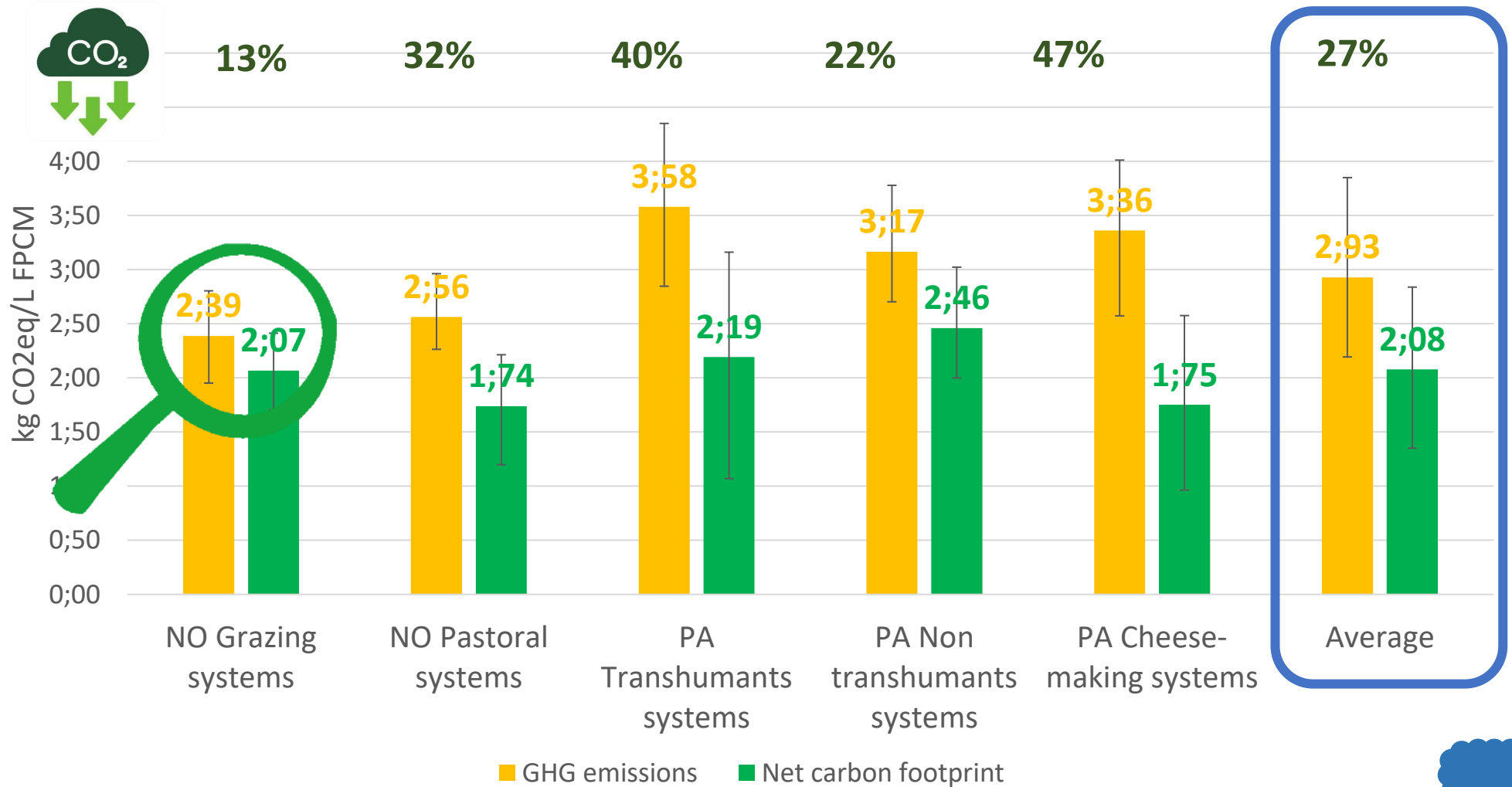
Carbon storage from grasslands and hedges : a way to reduce GHG emissions *Ex of meat sheep farms*



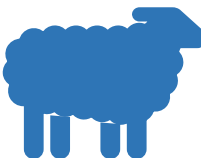
Results



GHG emissions and offsetting vary considering the system and within them *Ex of dairy sheep farms*

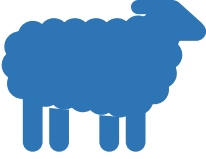


Results



Optimized practices with grazing for the 10% of farms with the lowest emissions

Ex with dairy sheep farms



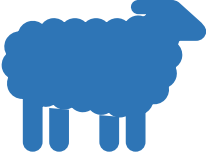
Results



		-21%	
Nord-Occitanie – Grazing systems		10% lowest (6 farms)	Average (60 farms)
Enviro. results	GHG emissions (kg CO ₂ eq/L FPCM)	1,89	2,39
	GHG emissions (kg CO ₂ eq/ha)	7508	7510
	Carbon storage (kg CO ₂ eq/ha)	771	912
Flock	Prolificacy rate	1,67	1,58
	Milk production (L/ewe)	421	350
Feed	Concentrates (g/L)	692	782
	Part of purchased concentrates (%)	50%	55%
Areas	Ewes' grazing (hours/day of grazing)	3,4	3,0
	Mineral nitrogen (kg N/ha)	39	47
Energy	Fuel consumption (L/ha)	119	130

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Results

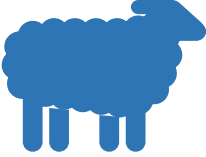


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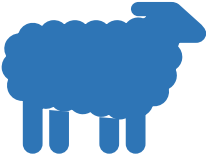


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Final FR results of the first wave of assessments from LIFE Green Sheep project, from all FR dairy sheep farms (191 farms)

Optimized practices with grazing for the 10% of farms with the lowest emissions

Ex with dairy sheep farms

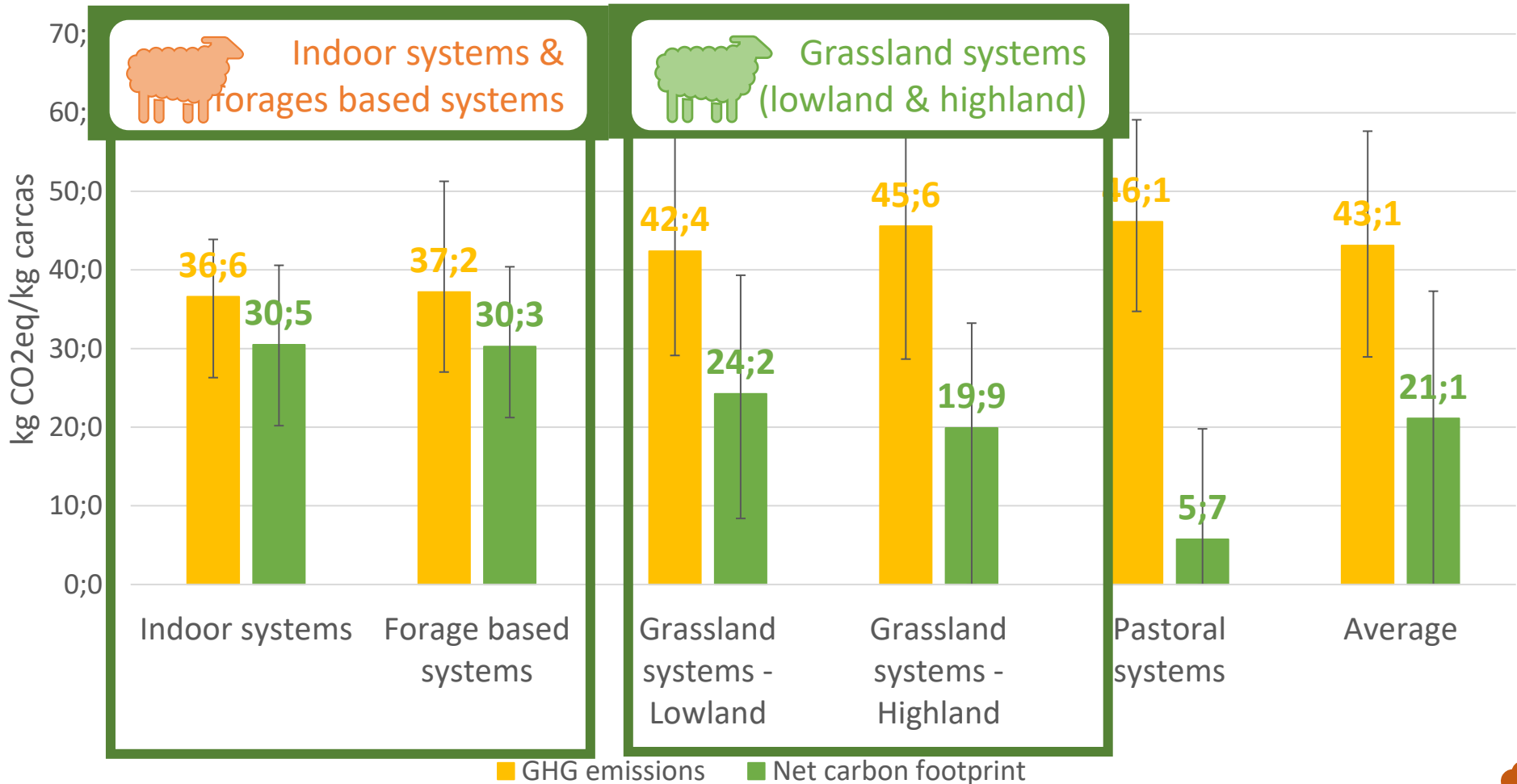


Results

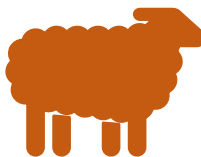


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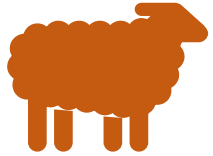
Carbon footprint & environmental results of grazing vs no grazing systems *Ex with meat sheep farms*



Results



Lower net carbon footprint and environmental performances for grazing systems *Ex with meat sheep farms*



Results

Grassland systems (lowland & highland)

Indoor systems & forages based systems

kg CO2eq/kg carcass

22,5 (0 – 148,9)

30,3 (0 – 56,5)

Carbon storage
kg CO2eq / ha

467 (42 – 3 442)

362 (-160 – 2 098)

Biodiversity conservation
eq ha of biodiv./ha

1,78 (0 – 23,8)

1,63 (0 – 15)

Water quality
kg N/ha

17 (0 – 258)

30 (0 – 381)





Take home messages

The first FR-study with a large sample size to examine GHG emissions & carbon storage from sheep farms

GHG emissions vary according to the rearing systems and also within them :

Grazing is a solution to reduce GHG emissions

A way to offset GHG emissions

Optimized practices are a way to mitigate GHG emissions

 27%

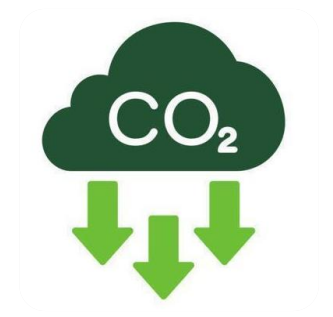
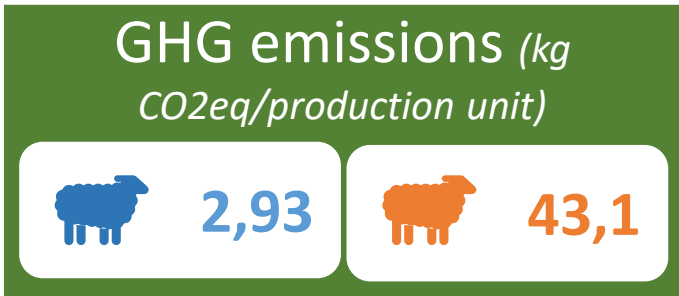
 60%



Improvement of other environmental indicators



Conclusion



Thanks to all French partners for these results !



Financial supports



Thank you for your attention

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