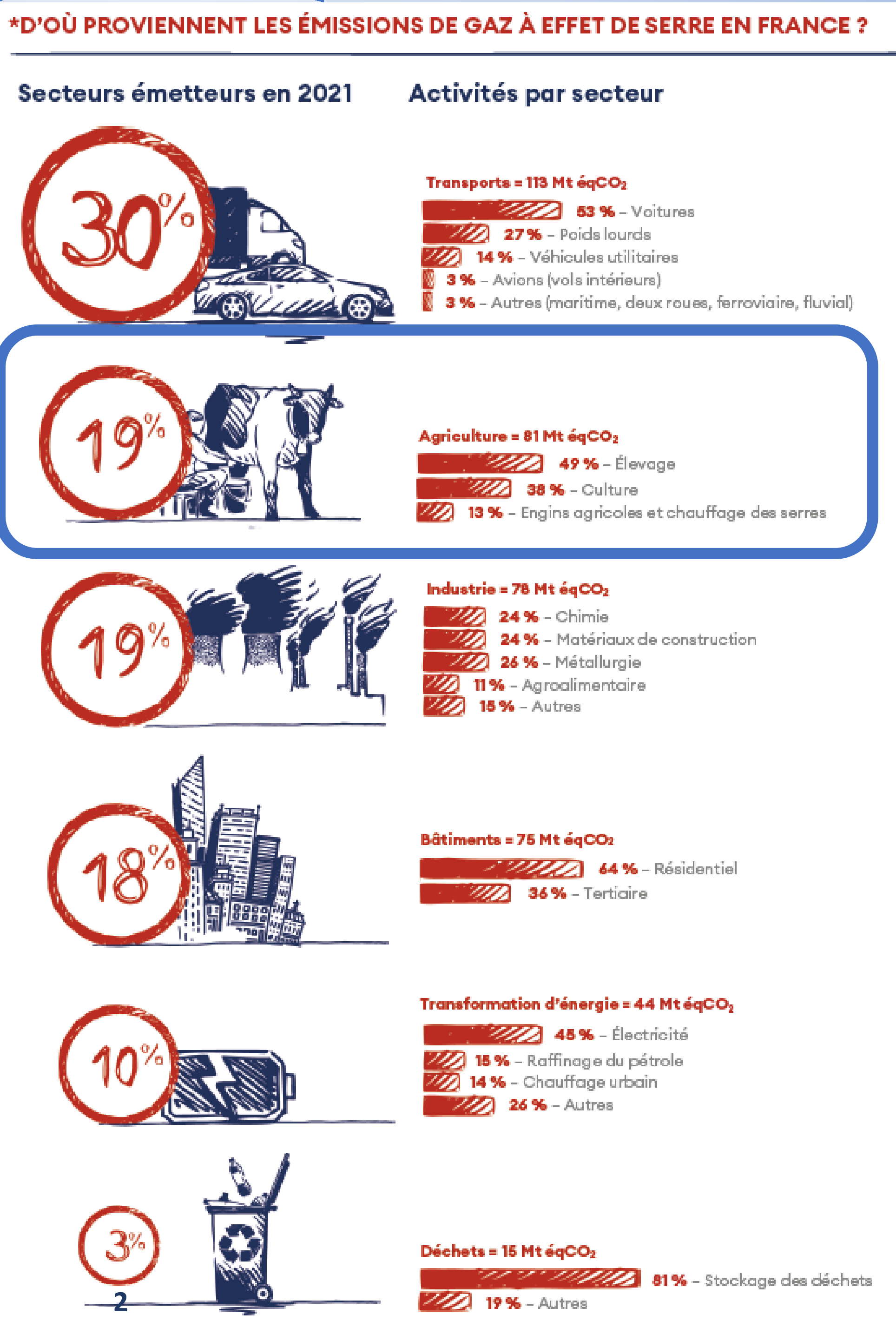
Session 66 : The current and future role of pasture production systems in the mitigation of and adaptation to climate change impacts in livestock farming systems

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



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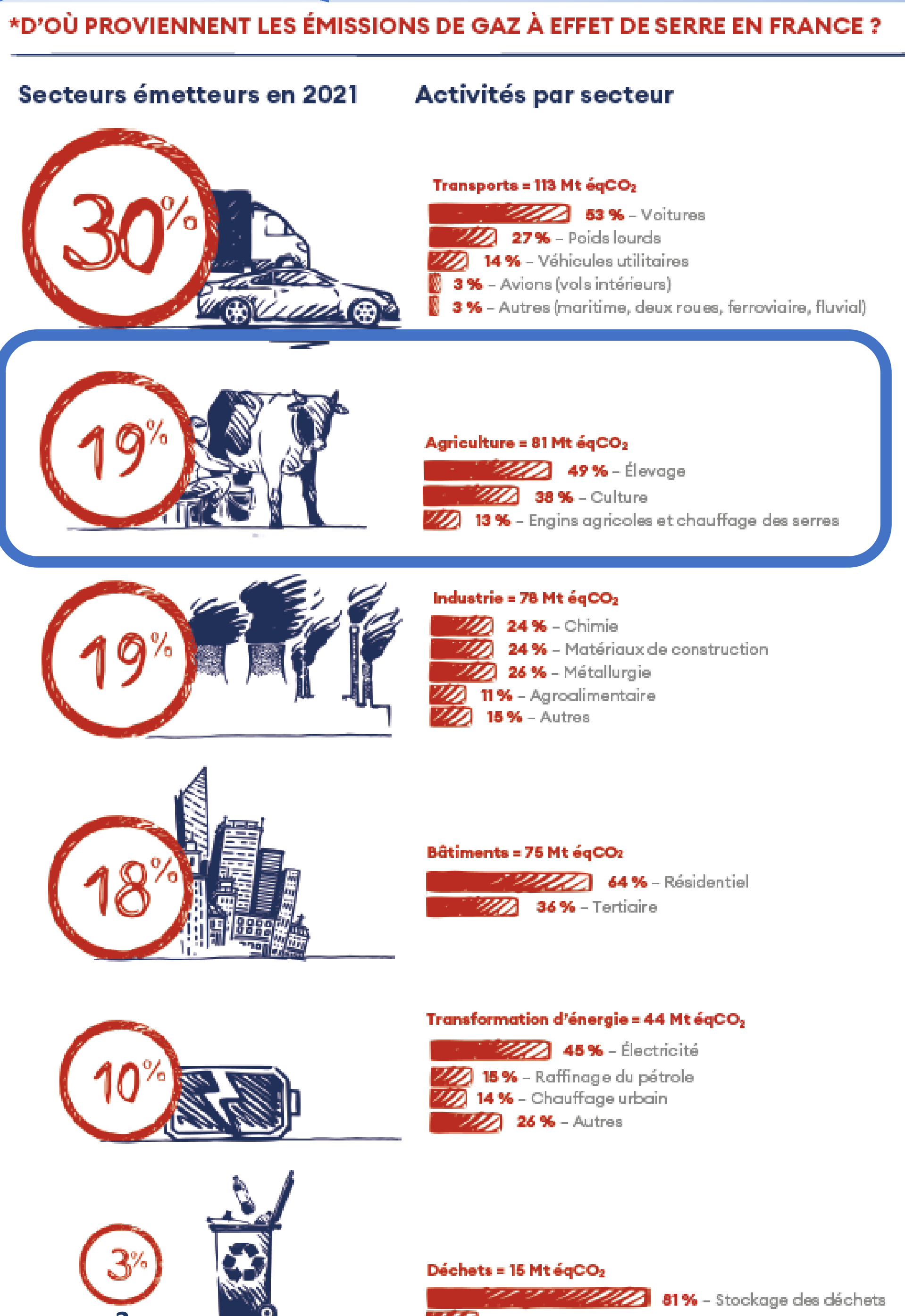
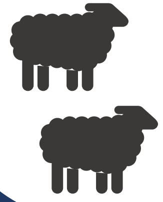
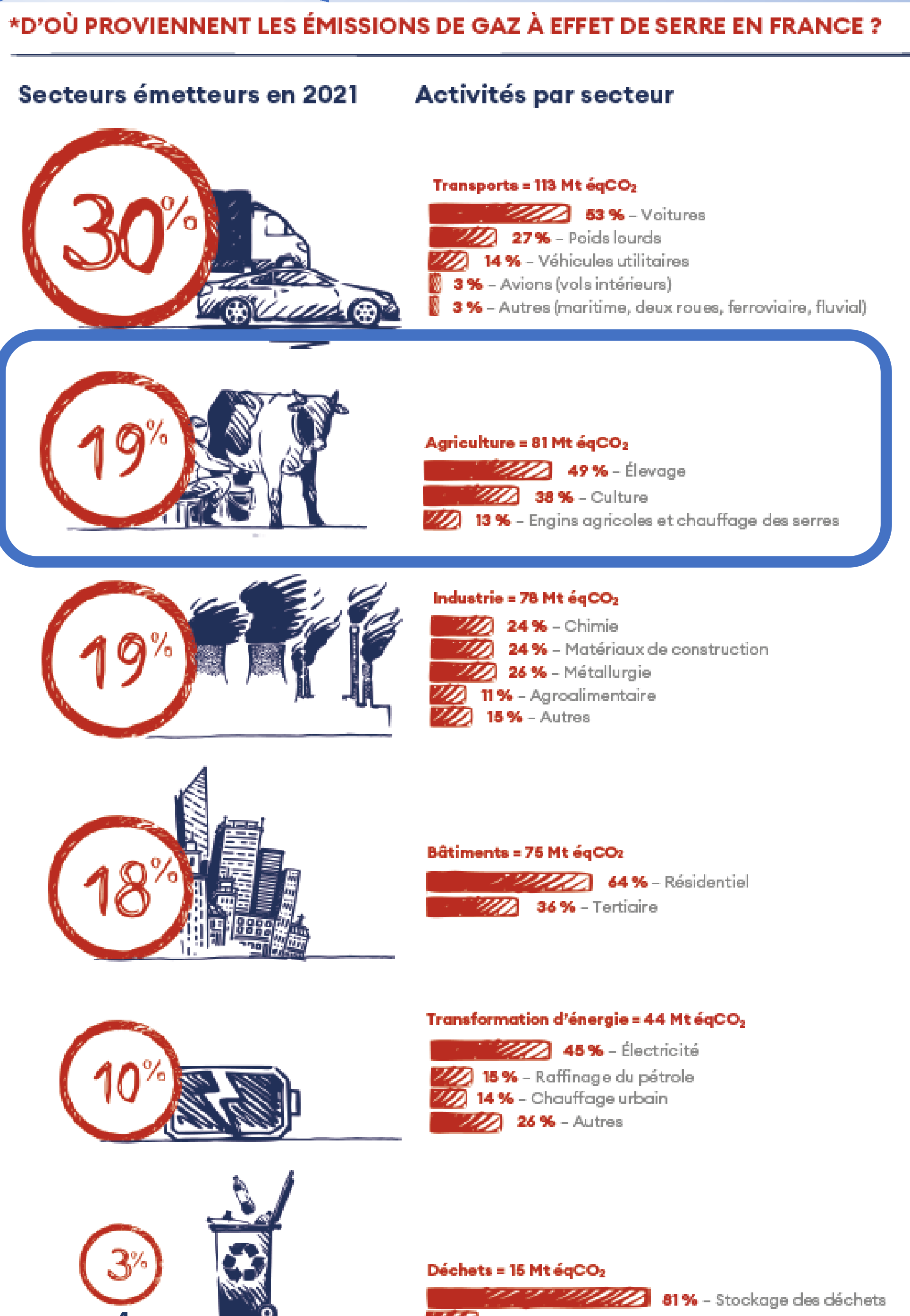


Livestock farming : 48% of Agriculture's emissions

In FR GHG, sheep farms represent less than 1%





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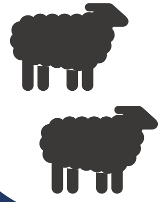
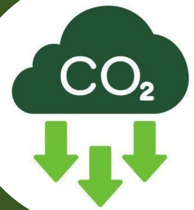


Livestock farming : can compensate its GHG emissions



Especially for sheep farms that use mainly grass areas

How to assess the carbon footprint of sheep farms ?

Using the CAP'2ER® tool based on LCA

Methodology

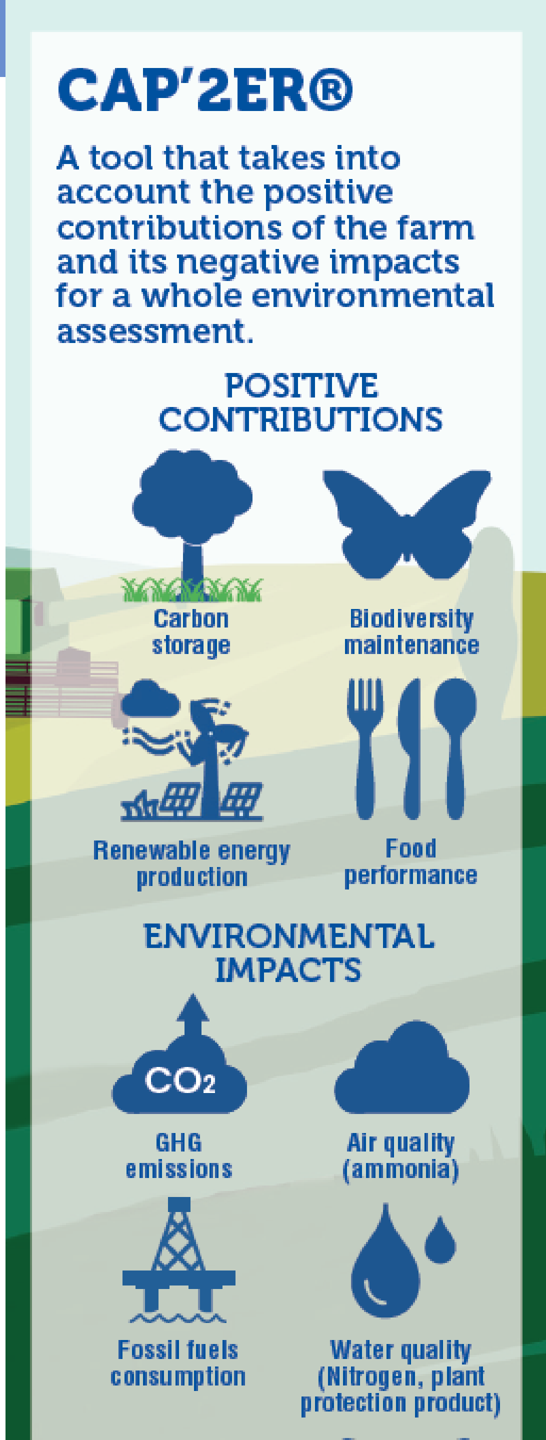
Methodology

How to assess the carbon footprint of sheep farms ?

Using the CAP'2ER® 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



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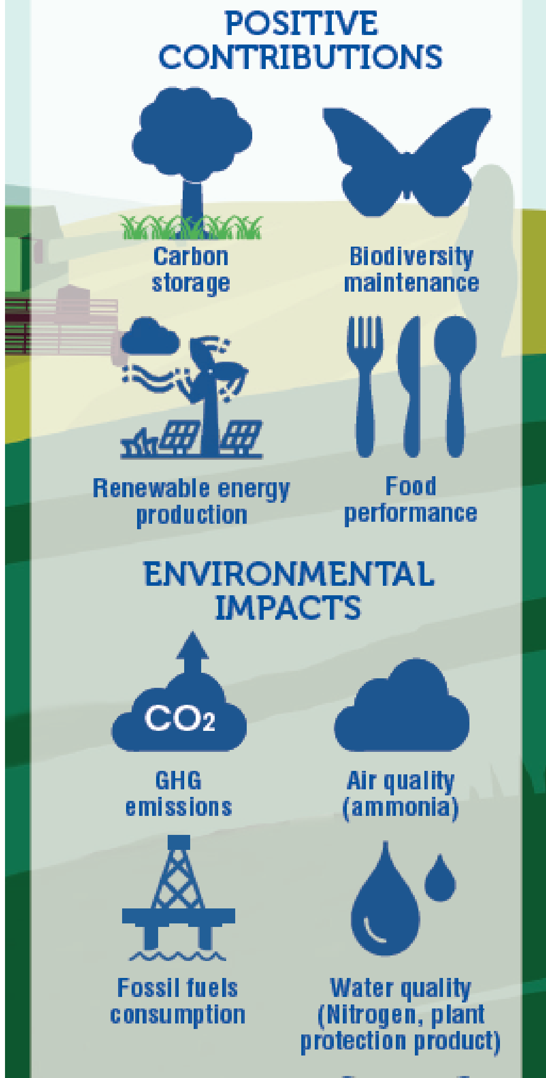
2 levels of assessment : level 1 (simplified) & level 2 (detailed)

- **For this study : <u>use of level 1</u>**

CAP'2ER®

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



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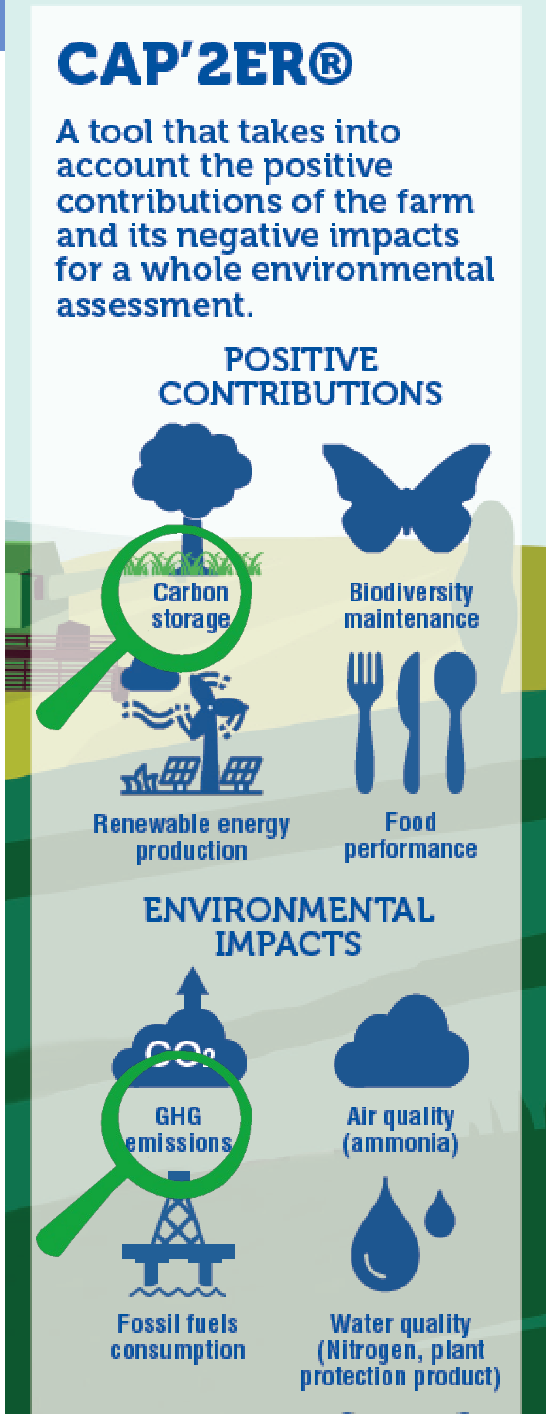


How to assess the carbon footprint of sheep farms ?

Methodology





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

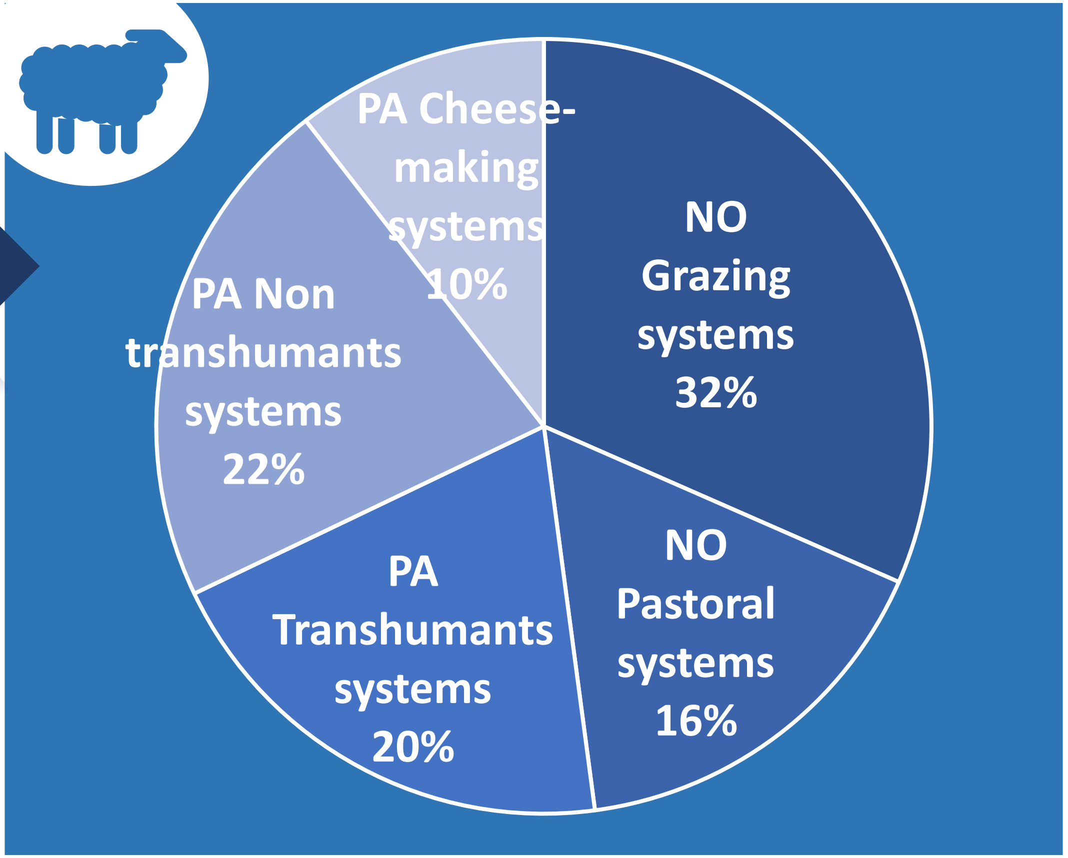
282
innovative farms involved in the implementation of action levers

https://life-green-sheep.eu/

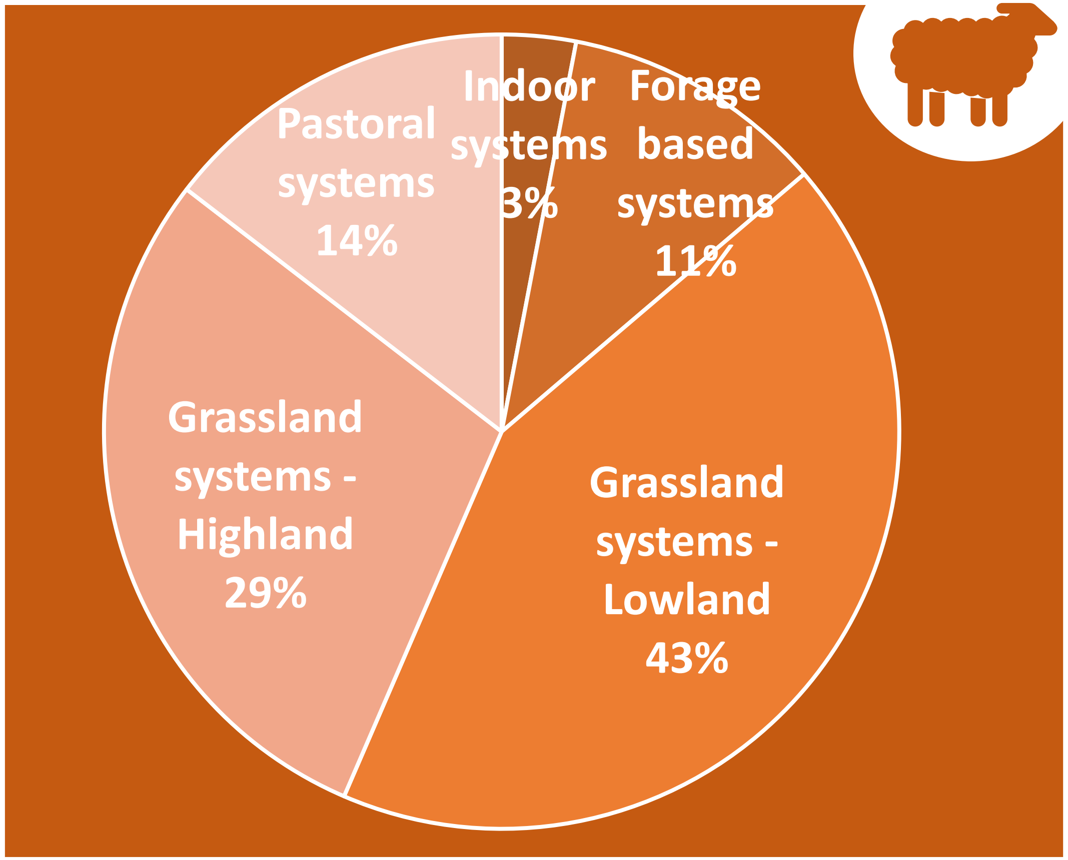
A important FR-scale sample with a diversity of rearing sheep systems (823)

Results

191 French dairy sheep farms



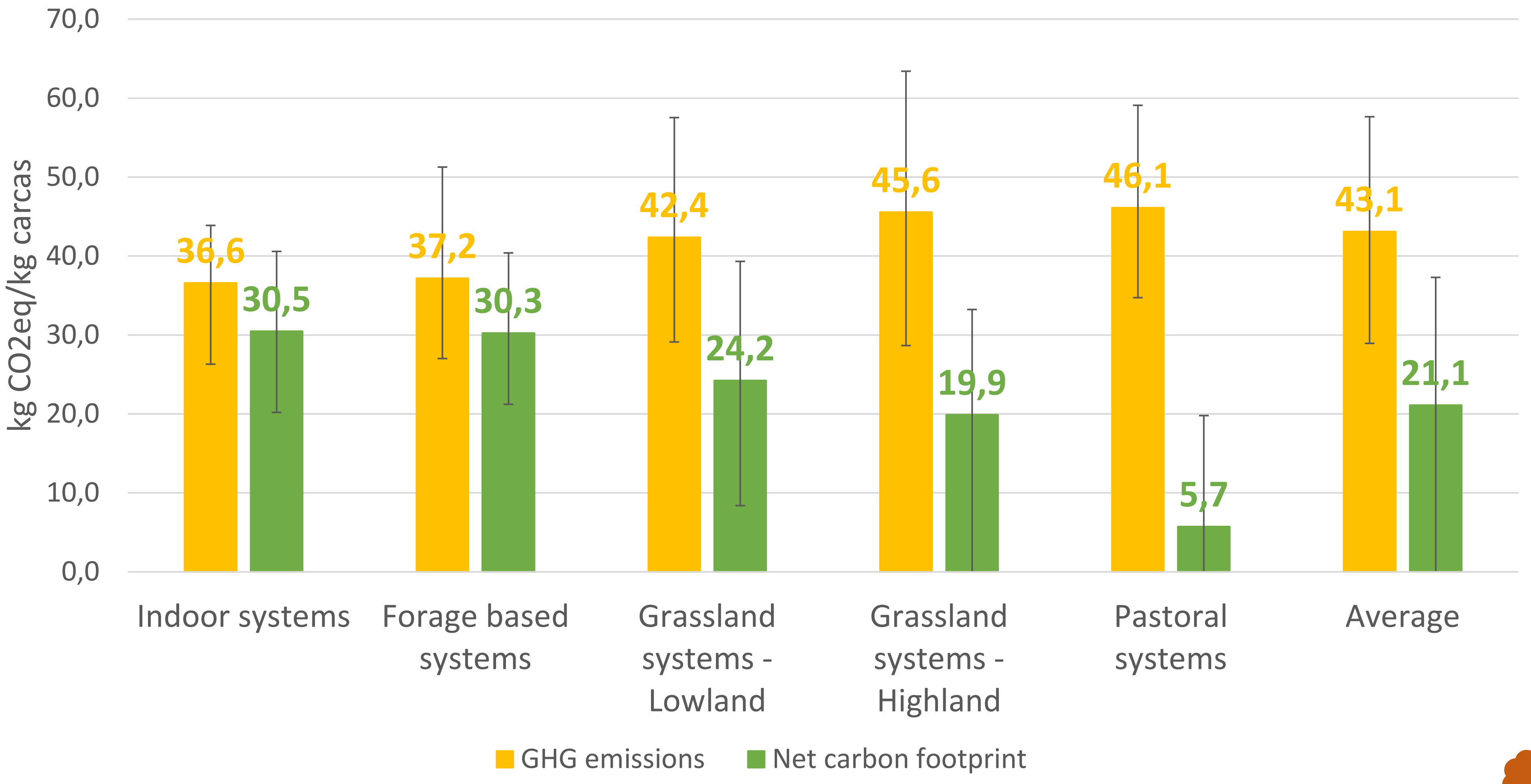
632 French meat sheep farms



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

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

Results



Final FR results of the first wave of assessments from LIFE Green Sheep project, from all FR meat sheep farms (632 farms)

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

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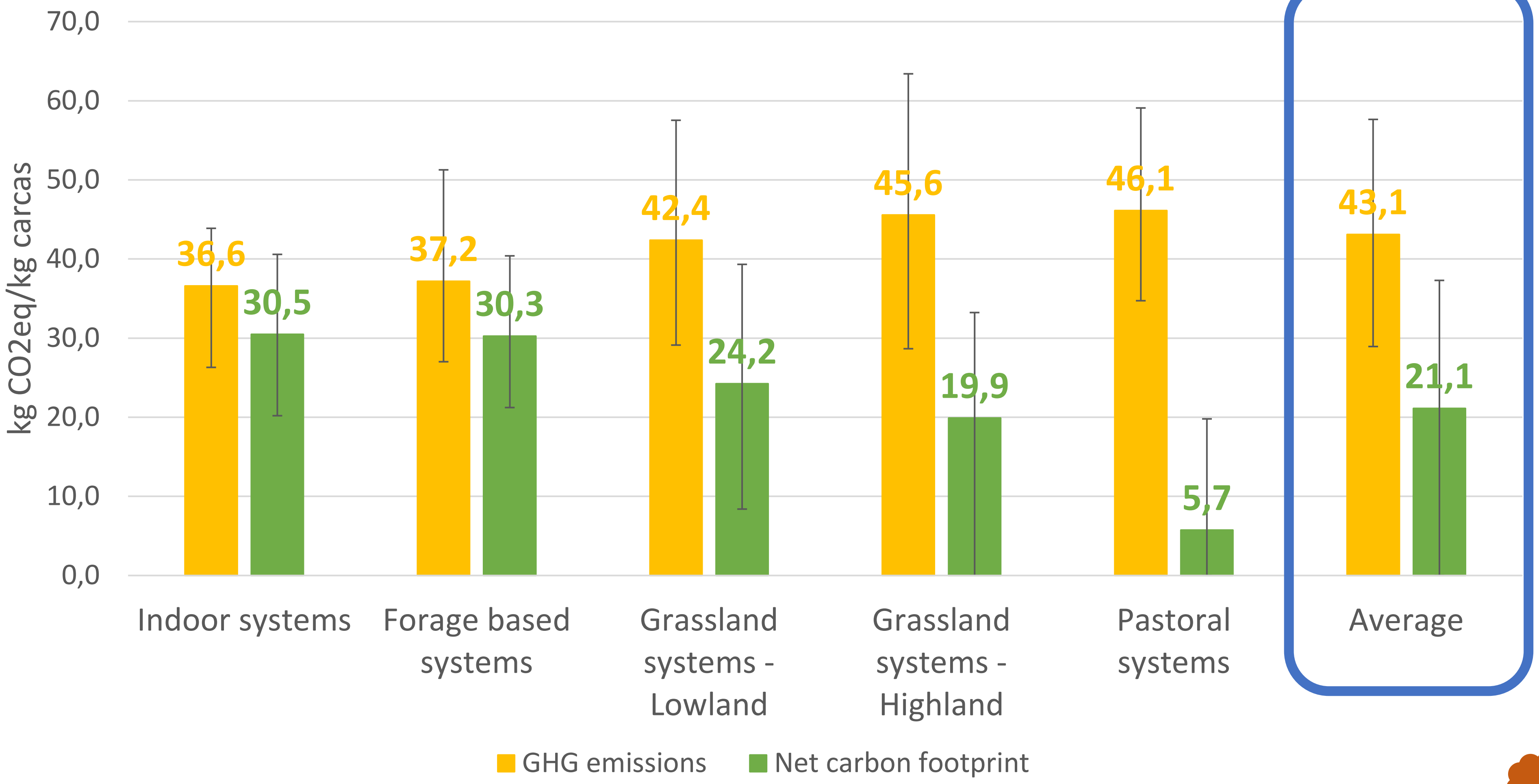

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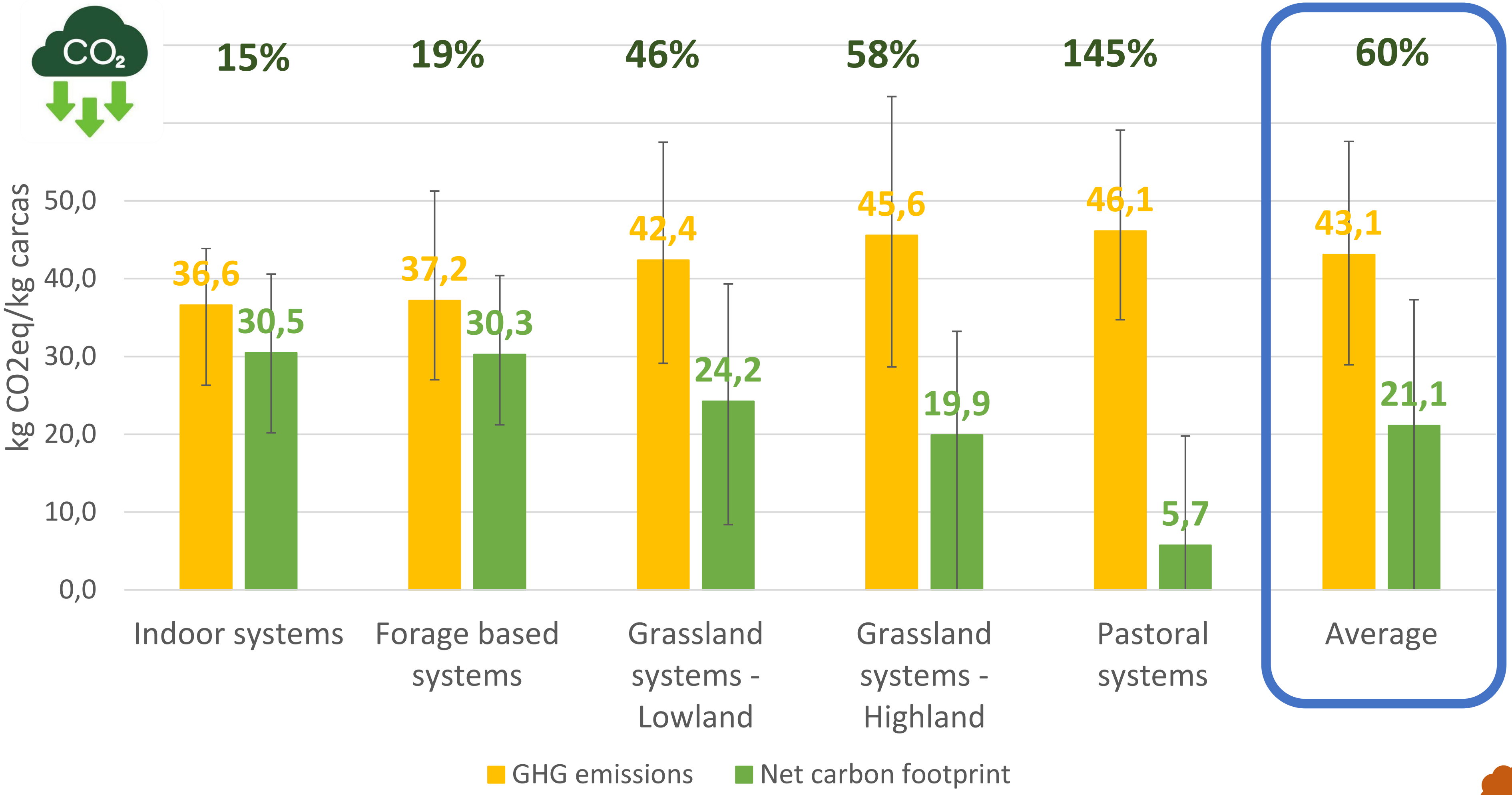

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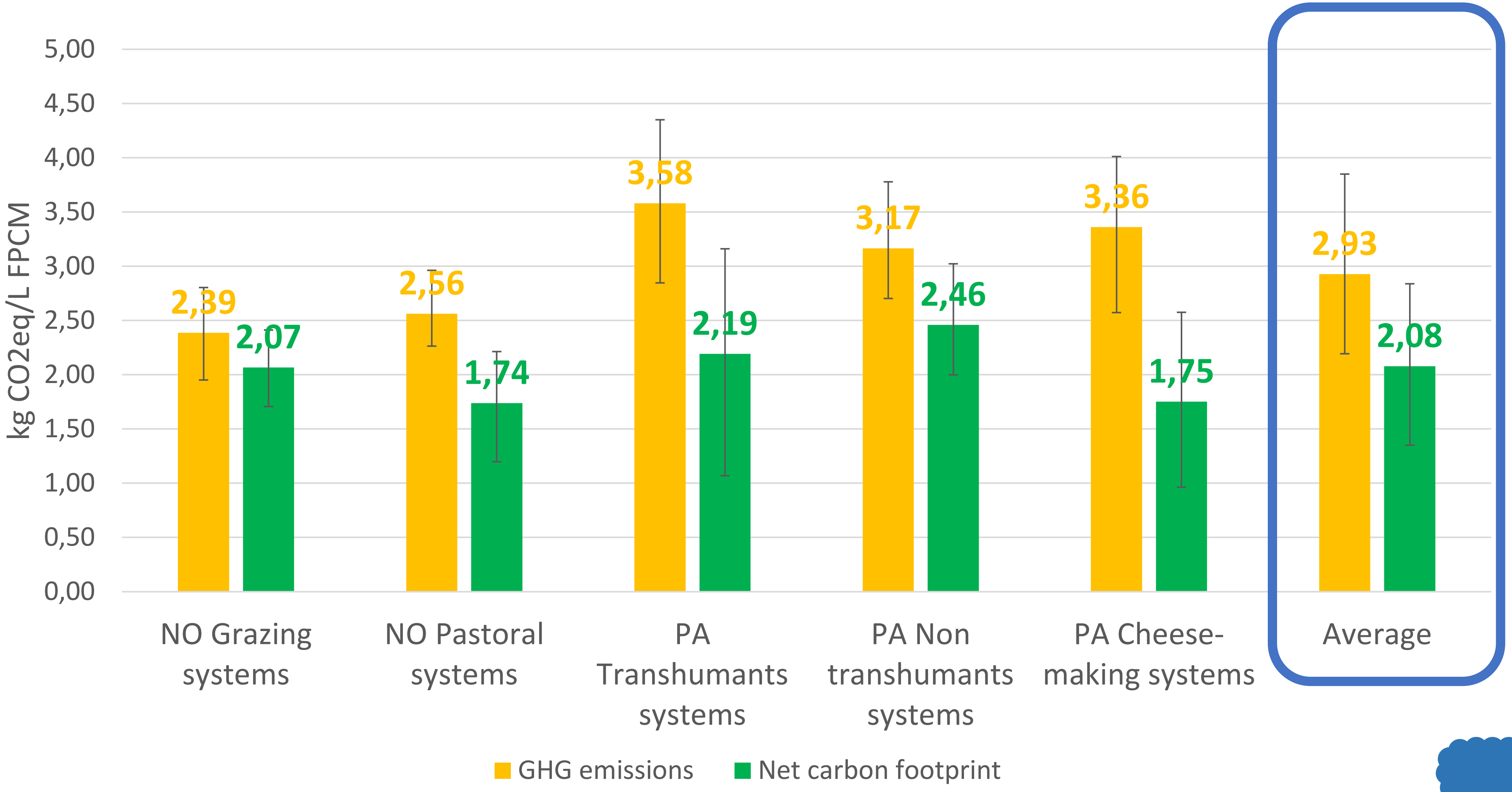
GHG emissions and offsetting vary considering the system and within them *Ex of dairy sheep farms*



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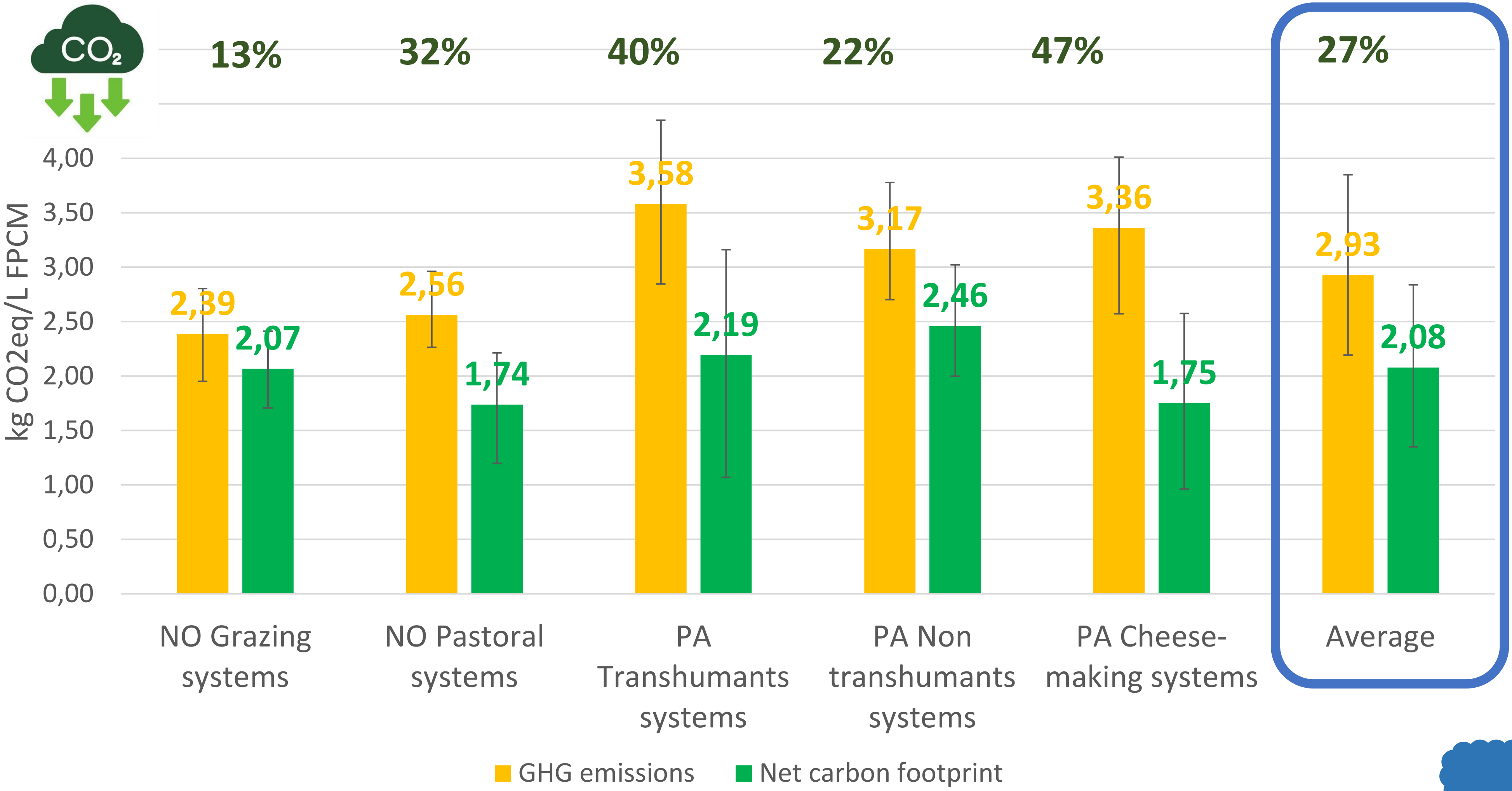

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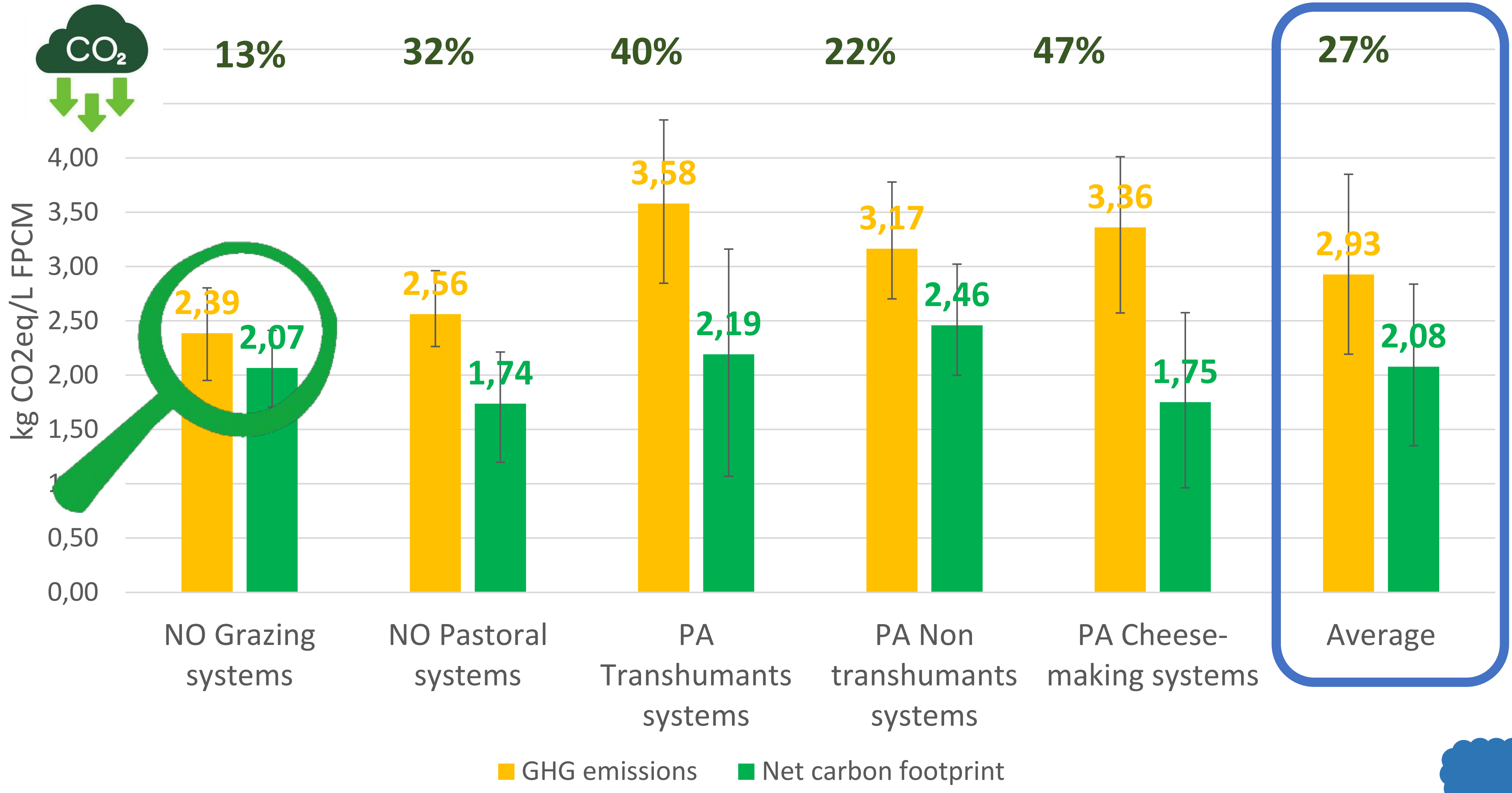

Final FR results of the first wave of assessments from LIFE Green Sheep project, from all FR dairy sheep farms (191 farms)

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

Ex with dairy sheep farms

Results

	Nord-Occitanie – Grazing systems	10% lowest (6 farms)	Average (60 farms)
Enviro. results	**GHG emissions** (kg CO2eq/L FPCM)	1,89	2,39
	GHG emissions (kg CO2eq/ha)	7 508	7 510
	Carbon storage (kg CO2eq/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%
	Ewes' grazing (hours/day of grazing)	3,4	3,0
Areas	**Mineral nitrogen** (kg N/ha)	39	47
Energy	**Fuel consumption** (L/ha)	119	130

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

Results

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Ex with dairy sheep farms

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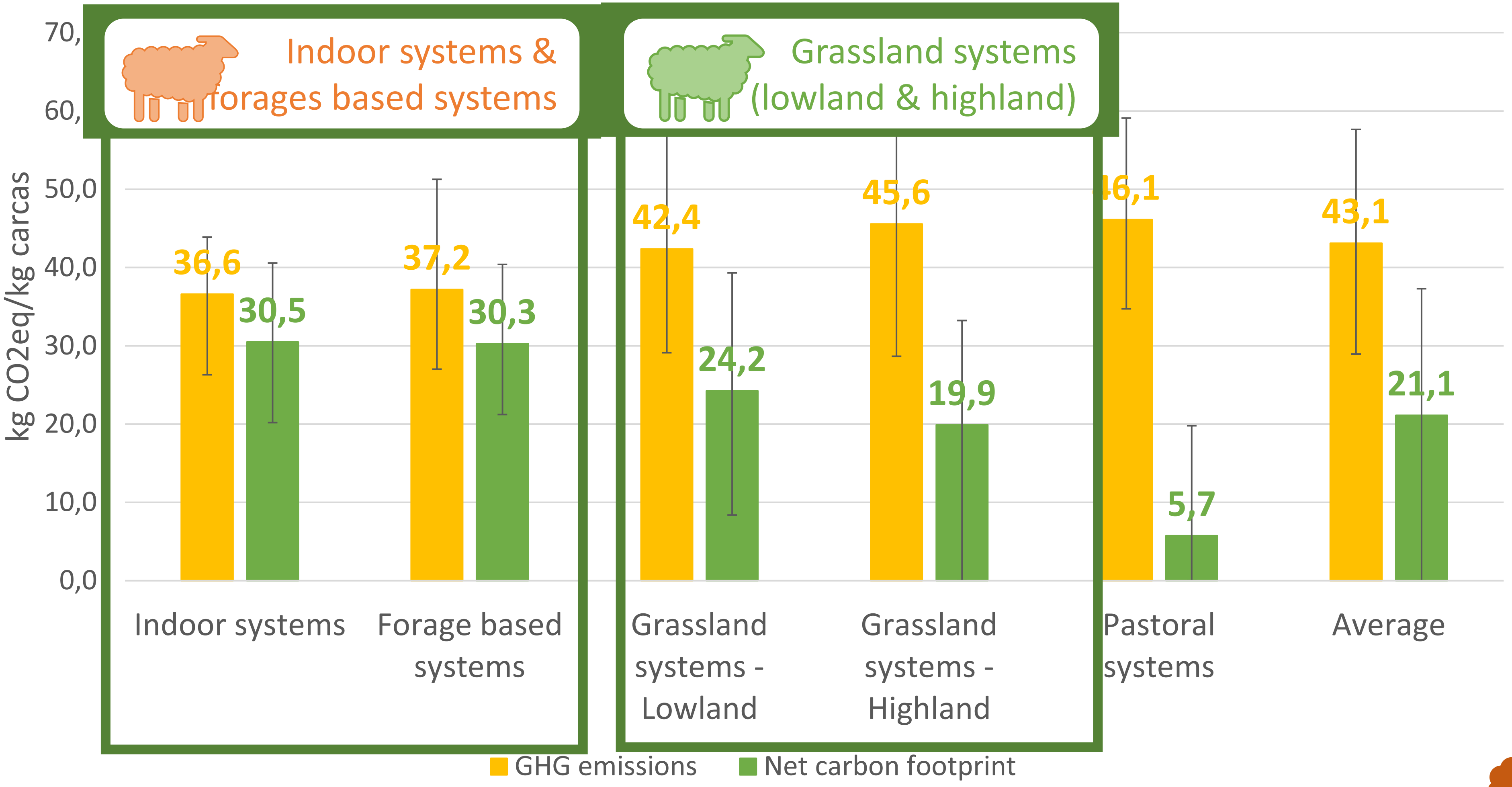
Carbon footprint & environmental results of grazing vs no grazing systems *Ex with meat sheep farms*

Results



Final FR results of the first wave of assessments from LIFE Green Sheep project, from all FR meat sheep farms (632 farms)

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 carcas

22,5 *(0 – 148,9)*

30,3 *(0 – 56,5)*

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Carbon storage
kg CO2eq / ha

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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)*

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Water quality *kg N/ha*	17 *(0 - 258)*	30 *(0 – 381)*

Final FR results of the first wave of assessments from LIFE Green Sheep project, from all FR meat sheep farms (632 farms)

Take home messages

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

Conclusion

GHG emissions *(kg CO2eq/production unit)*

2,93

43,1

Net carbon footprint *(kg CO2eq/production unit)*

2,08

21,1

Take home messages

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GHG emissions (*kg CO2eq/production unit)*

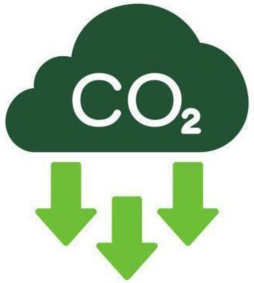
2,93	43,1

Net carbon footprint *(kg CO2eq/production unit)*

2,08	21,1

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

Optimized practices are a way to mitigate GHG emissions



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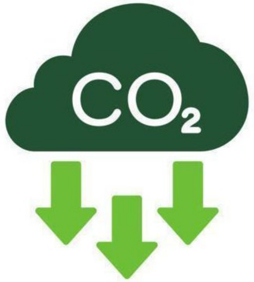

Grazing is a solution to reduce GHG emissions

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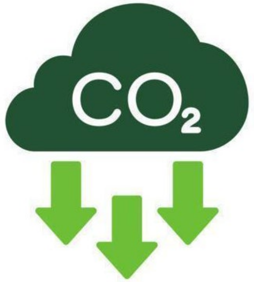

Grazing is a solution to reduce GHG emissions

A way to offset GHG emissions

27%	
60%	

Conclusion

Take home messages

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A way to offset GHG emissions

27%	
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Improvement of other environmental indicators

Thanks to all French partners for these results !

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