

# The design and application of the Public Goods tool: an evaluation framework for the development of sustainable farming systems

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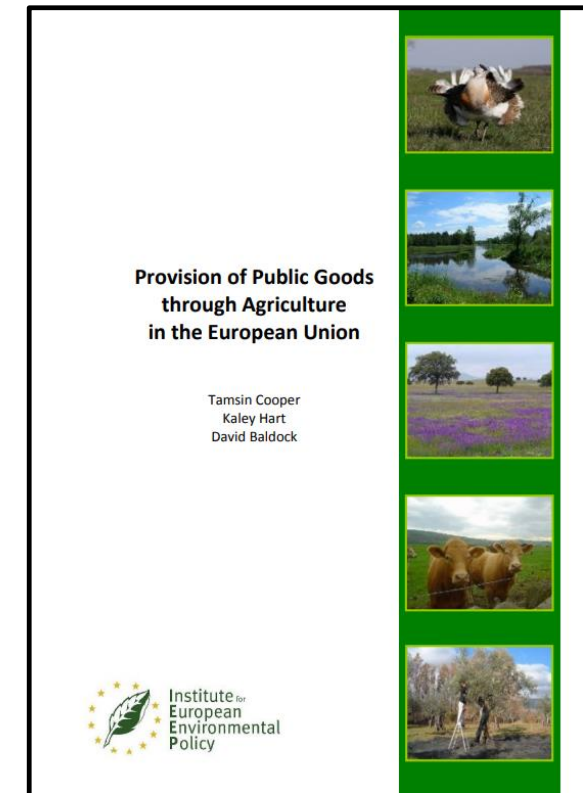
Scotland's Biennial Land Use and the Environment Conference XII

28.11.2018



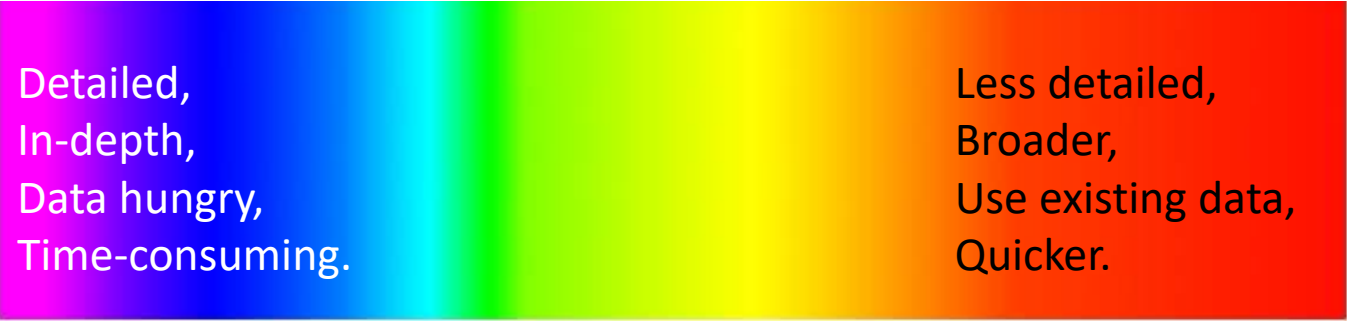
# Public Goods

- **Available to all**
- **Non-rival**
- **Pure public goods are rare**
- **Not secured through markets**
- **May justify continued financial support**



Cooper *et al.* (2009)

# Development of assessment tools:



Detailed,  
In-depth,  
Data hungry,  
Time-consuming.

Less detailed,  
Broader,  
Use existing data,  
Quicker.

**The approach depends on the aims of the assessment, data availability, producer involvement...**

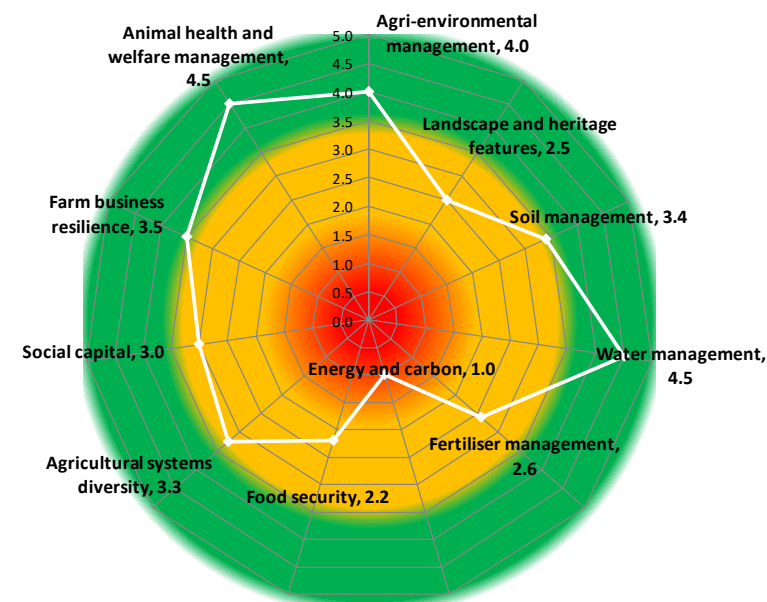
**There's no right or wrong approach – it depends on the circumstances.**

# Development of the Public Goods tool

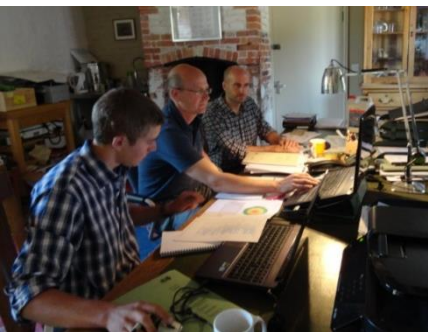
## FAO SAFA (2012)



## ORC Public Goods Tool (PG Tool)



# Development of the Public Goods tool



# PG Tool indicator categories against SAFA framework

Environment and Animal Welfare	Social
Water Management Landscape and Soil quality Biodiversity Energy and carbon Animal Health Freedom from stress	Fair trading practices Labour use Community engagement Human health and safety Training for staff Public access
Economic	Governance
Investment Vulnerability Flexibility Local economy Gross margin	Ethics Accountability Participation Rule of law Holistic management

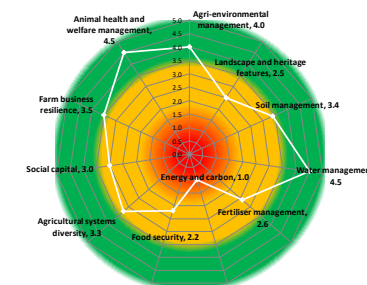
# Horizon 2020 project iSAGE ([www.isage.eu](http://www.isage.eu))



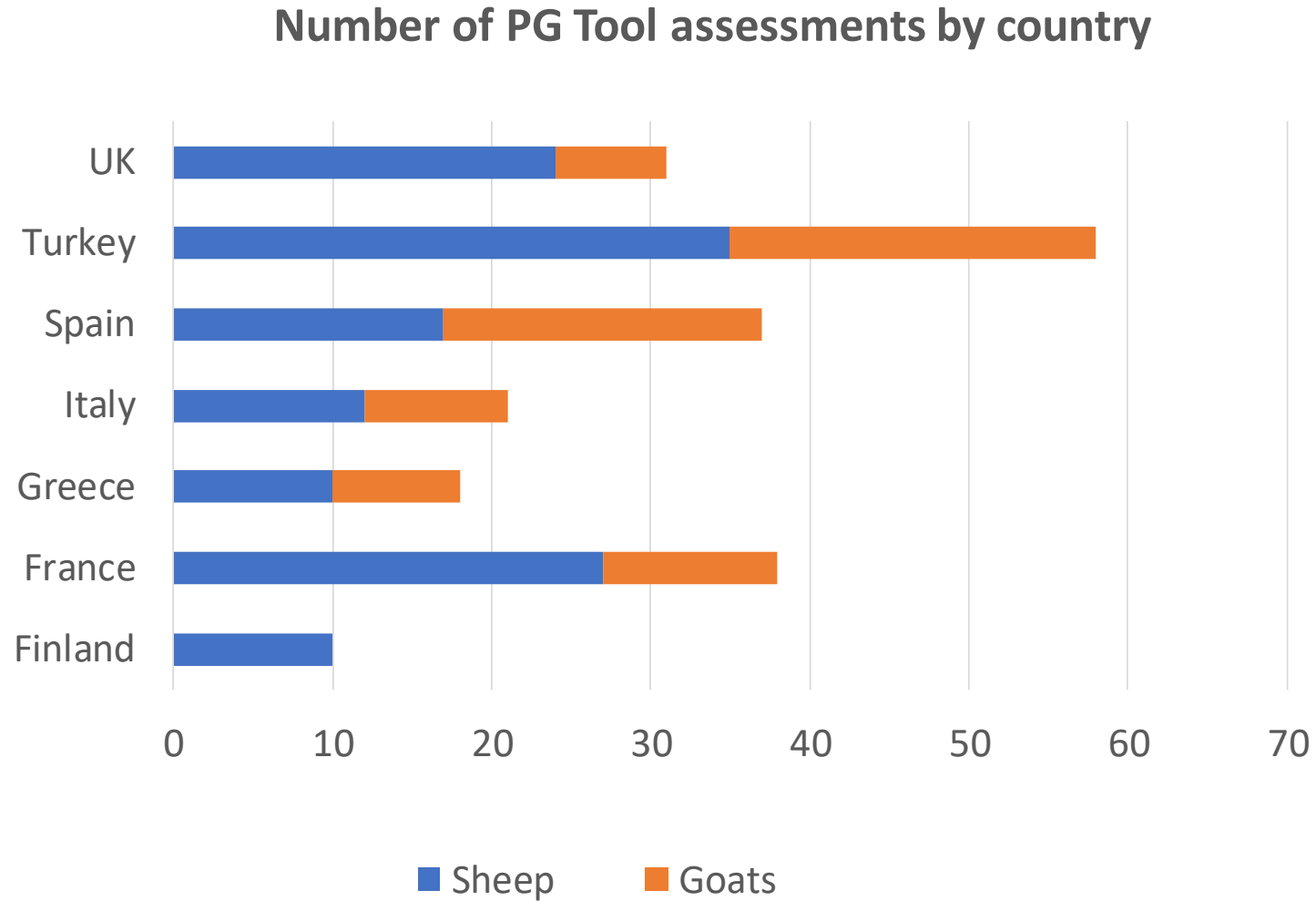
**iSAGE** aims to improve the overall sustainability and innovative capacity of the sheep and goat sectors in Europe through an industry-led, multi-disciplinary approach. Core objectives include:

- **Identifying, with involvement of stakeholders, suitable indicators and tools for assessing the sustainability of sheep and goat production** systems in Europe, with a special focus on social, economic and animal welfare indicators.
- **Assessing the sustainability of sheep and goat farm systems and supply chains**, including relationships between economic, environmental and social outcomes and trade-offs using indicators identified.
- **Development of a toolbox** of assessment tools and indicators that can be used in the future to assess the sustainability of sheep and goat production systems.
- **Assessing current rates of participation and collaboration** within the sheep and goat sector in Europe

ORC Public Goods Tool (PG Tool)

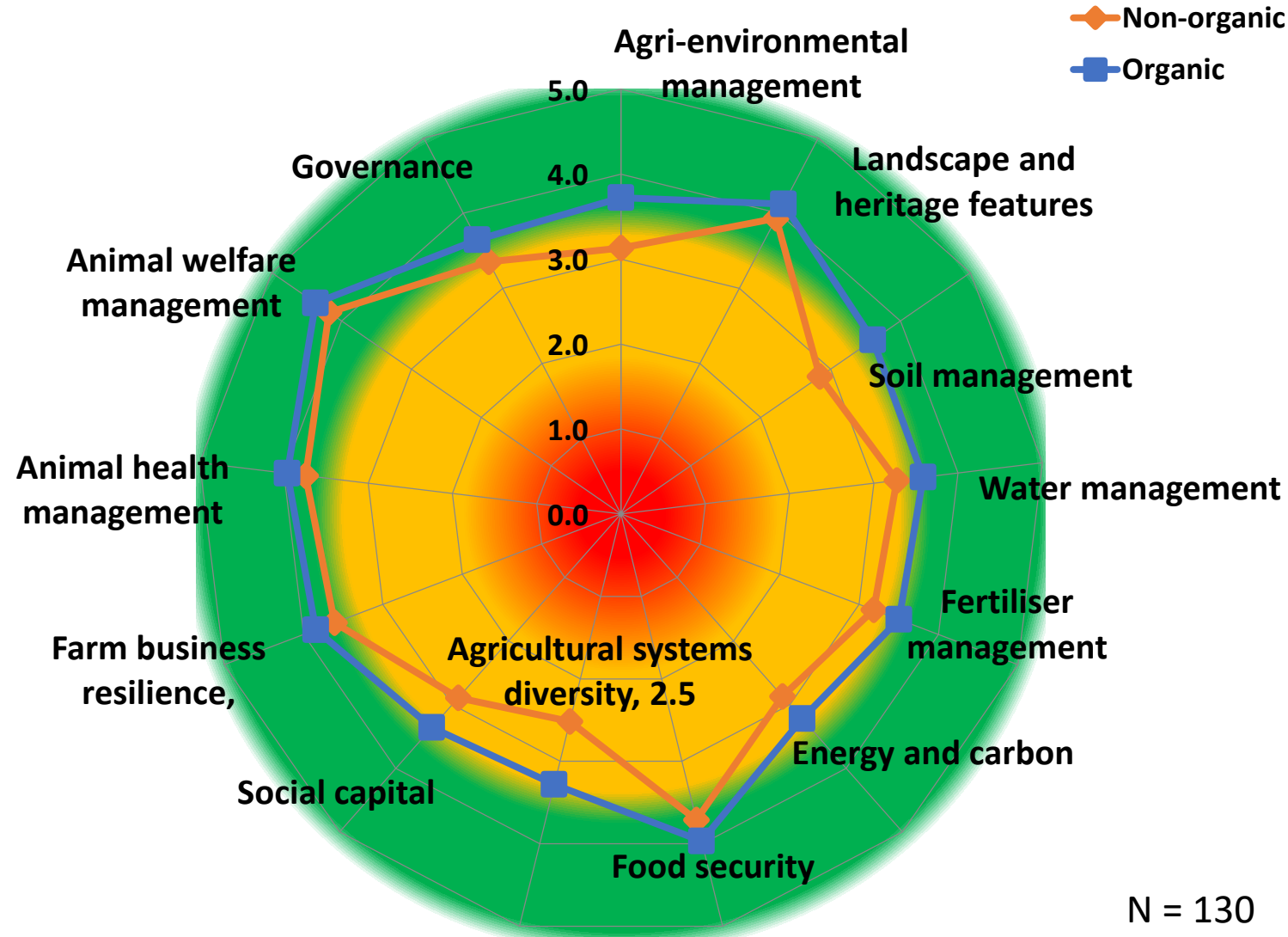


# Early results from analysis of 215 PG tools

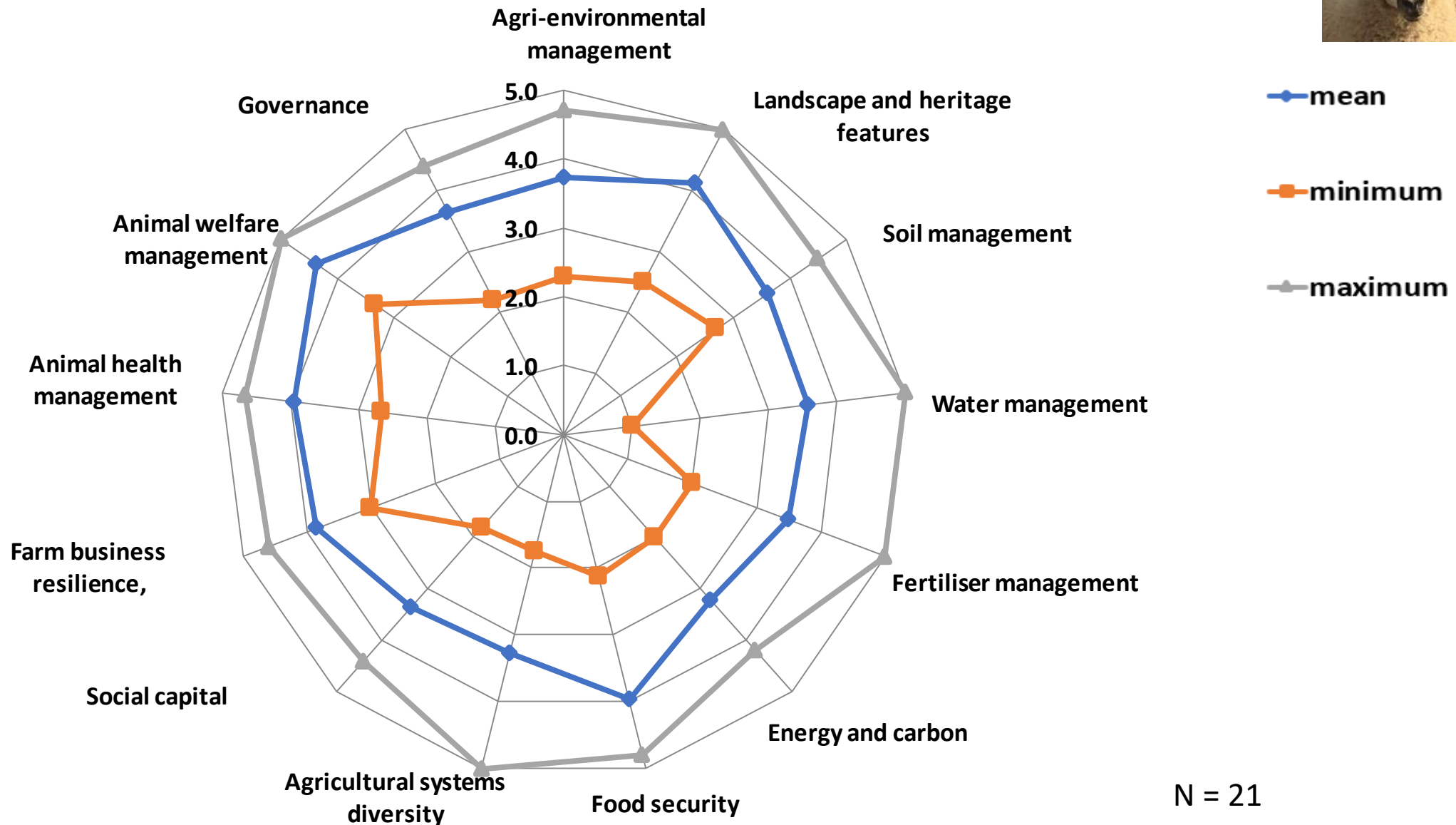




# Early results – mean scores from sheep sector in Europe

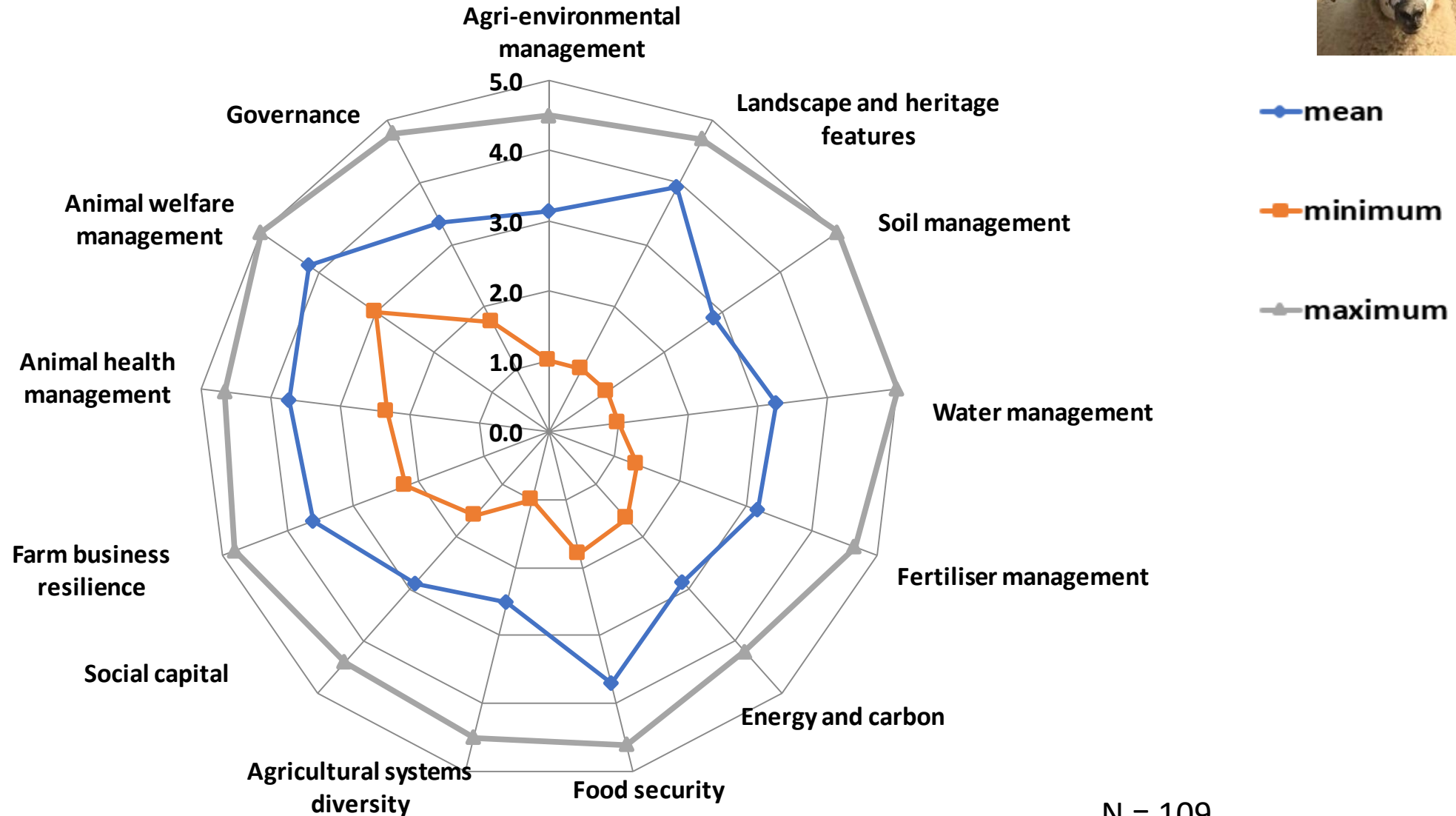


# Early results – organic farms only – all countries



N = 21

# Early results – non-organic farms - all countries

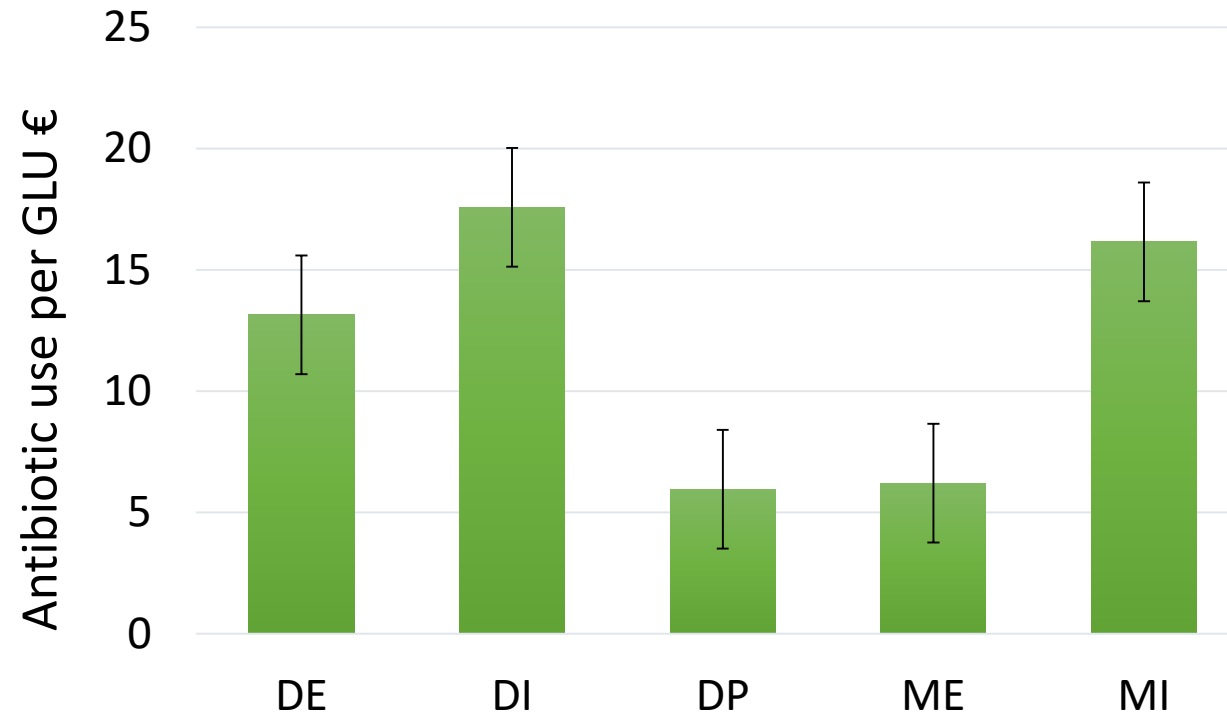


N = 109

# Antibiotic Use per Grazing Livestock Unit (GLU) – results from all countries



Typology	N
Dairy Extensive (DE)	6
Dairy Intensive (DI)	5
Dual purpose (DP)	22
Meat Extensive (ME)	21
Meat Intensive (MI)	5

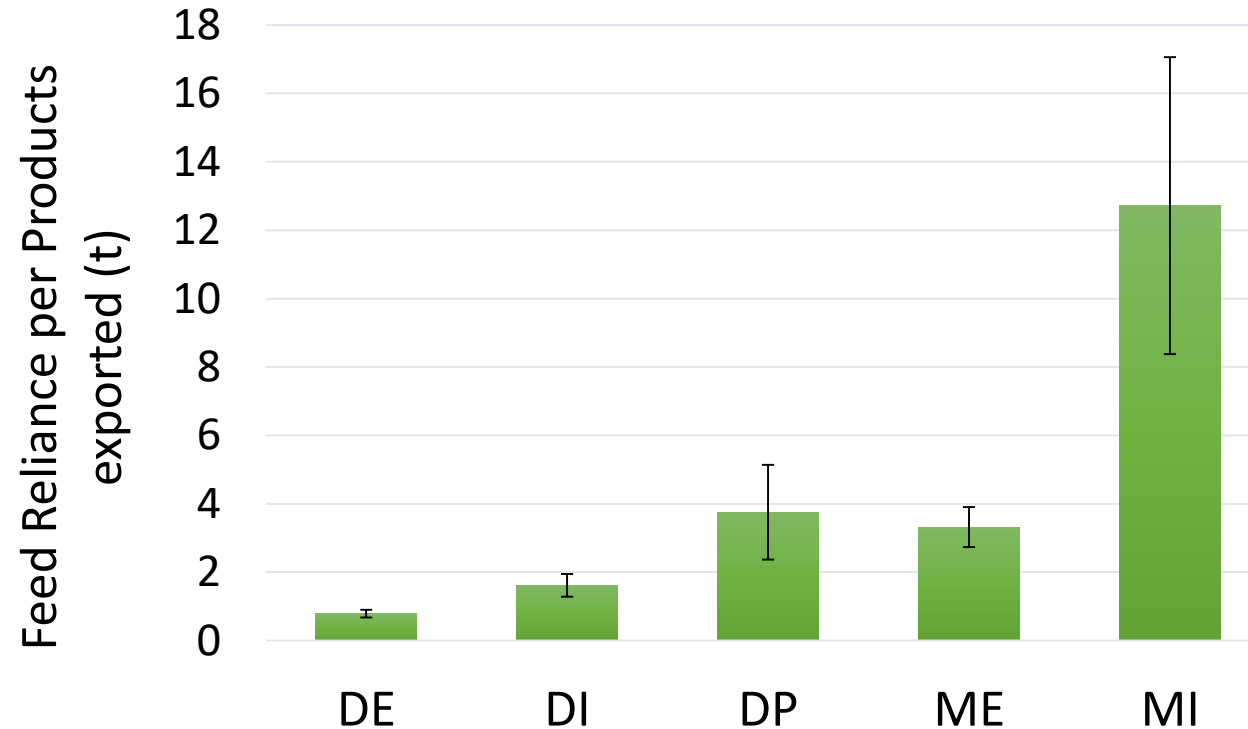


Typology	P-Value
DI – DP	0.015
DI - ME	0.031
MI– DP	0.018
MI - ME	0.037

Kruskal Wallis:  $P = 0.04$

# Reliance on imported concentrates per tonne of exported product – results from all countries

Typology	N
Dairy Extensive (DE)	17
Dairy Intensive (DI)	8
Dual Purpose (DP)	15
Meat Extensive (ME)	36
Meat Intensive (MI)	12

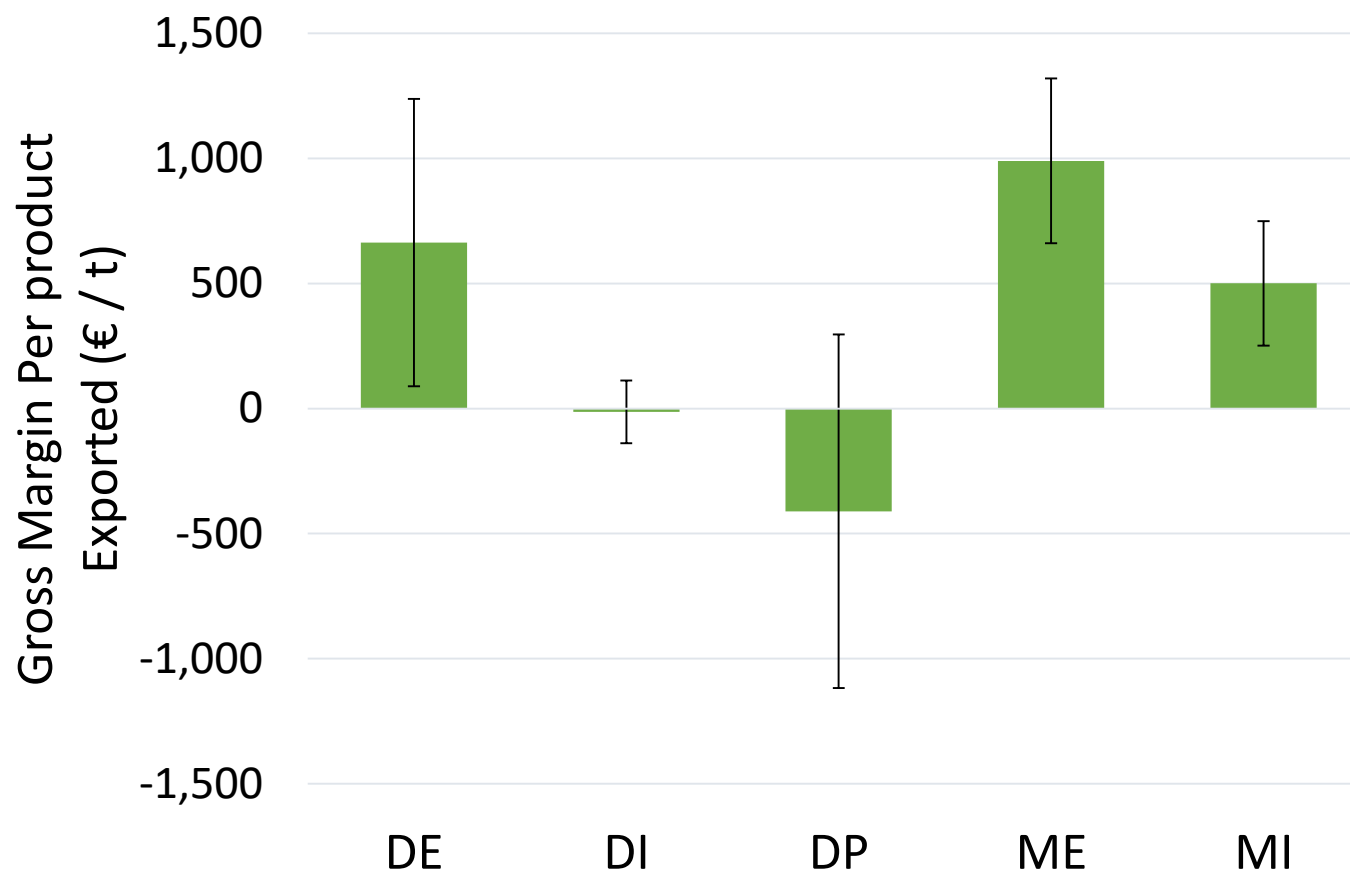


Typology	P-Value
DE - DI	0.039
DE - DP	0.003
DE - ME	< 0.001
DE - MI	< 0.001
DI - MI	0.002
DP - MI	< 0.001
ME - MI	< 0.001

Kruskal Wallis:  $p < 0.001$

# Gross Margin per Product Export – results from all countries

Typology	N
Dairy Extensive (DE)	17
Dairy Intensive (DI)	6
Dual Purpose (DP)	21
Meat Extensive (ME)	25
Meat Intensive (MI)	10



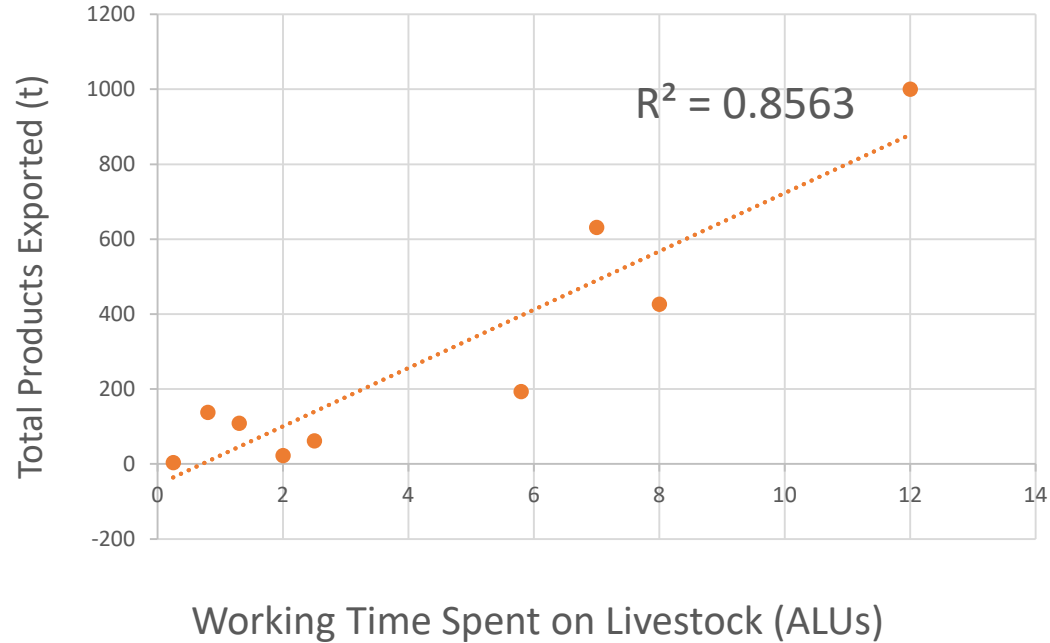
Typology	P-Value
DE - ME	0.022
DI - ME	0.023
DP - ME	0.012

Kruskal Wallis:  $p = 0.045$

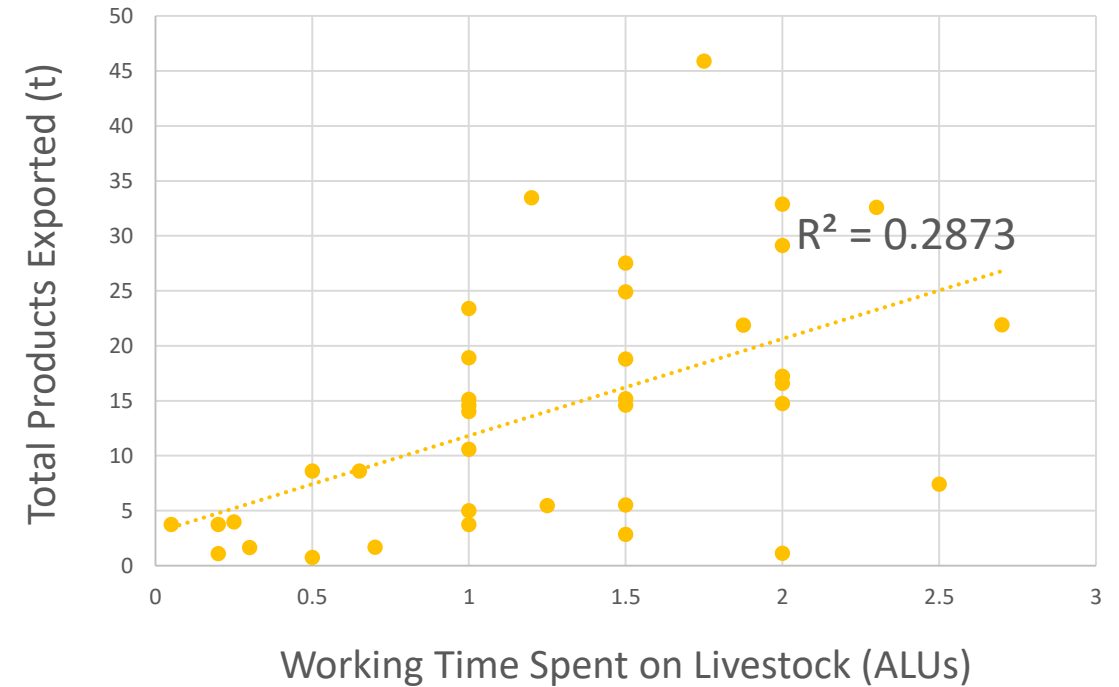
# Labour Productivity



## Sheep Dairy Intensive



## Sheep Meat Extensive

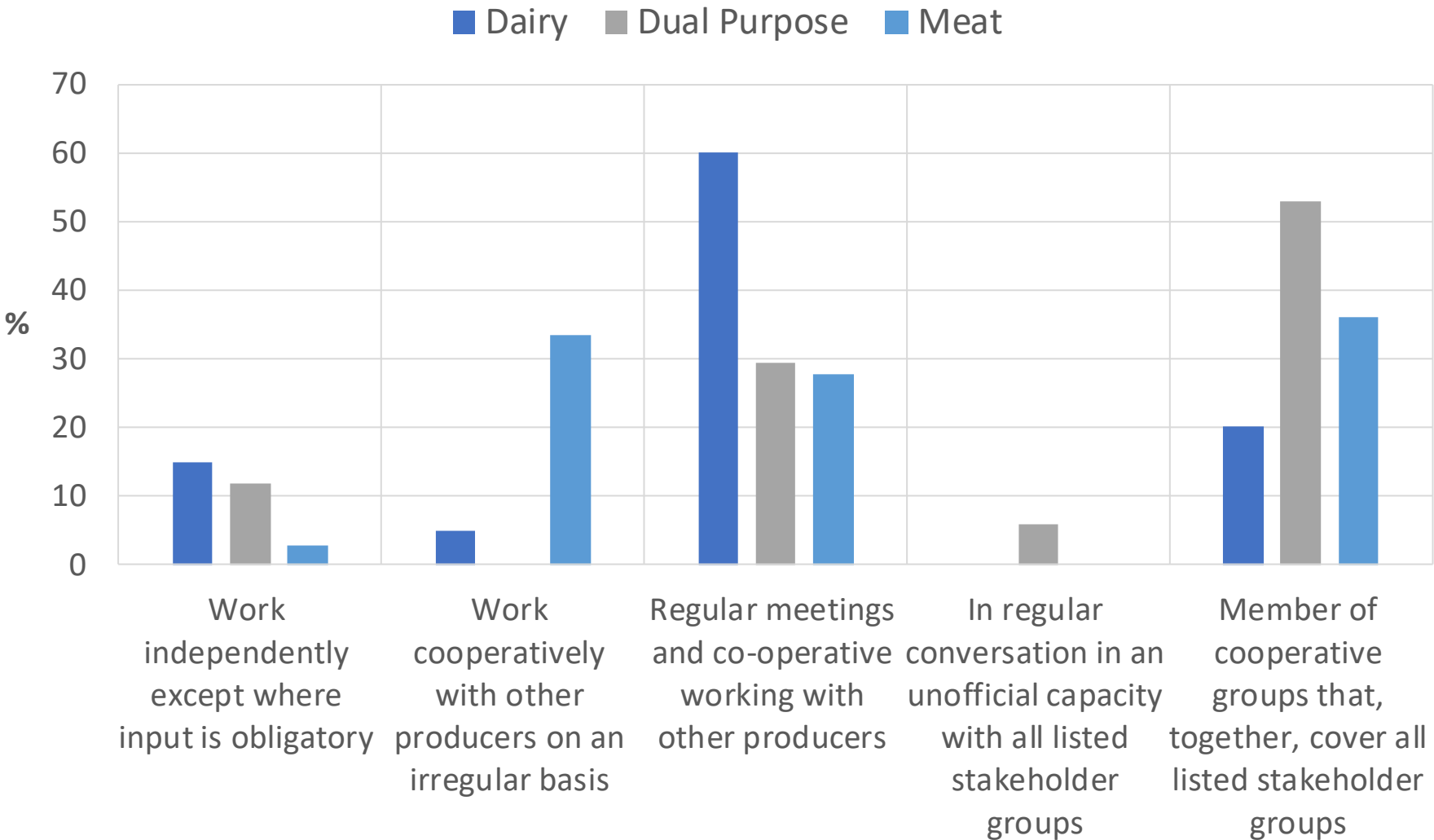


# Participation, KE and training in the sheep industry



Participation in knowledge exchange and training was quite high across all categories ( $p > 0.05$ )

Typology	N
Meat	20
Dual Purpose	17
Dairy	36



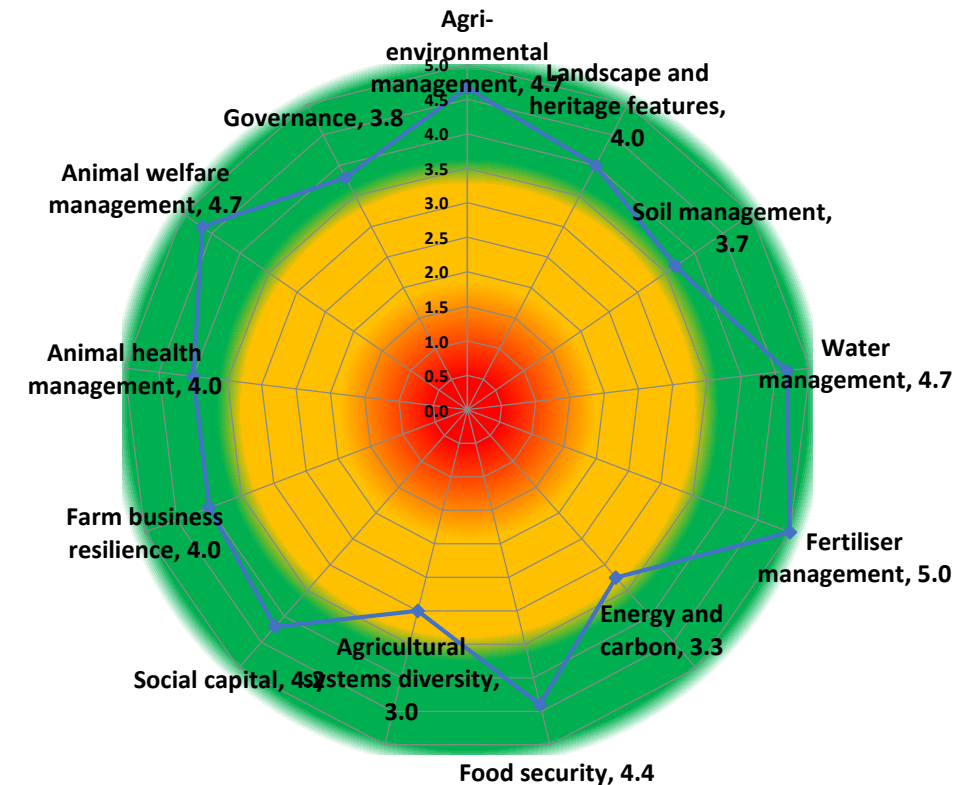
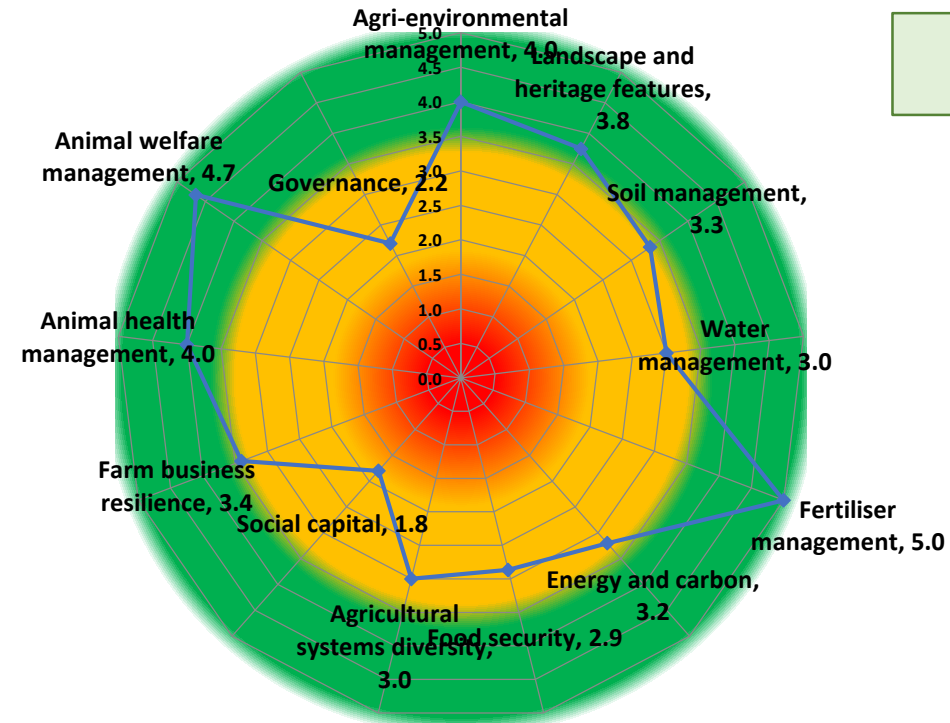


# Using the PG Tool to assess the effects of innovations in the sector

← Pre Innovation

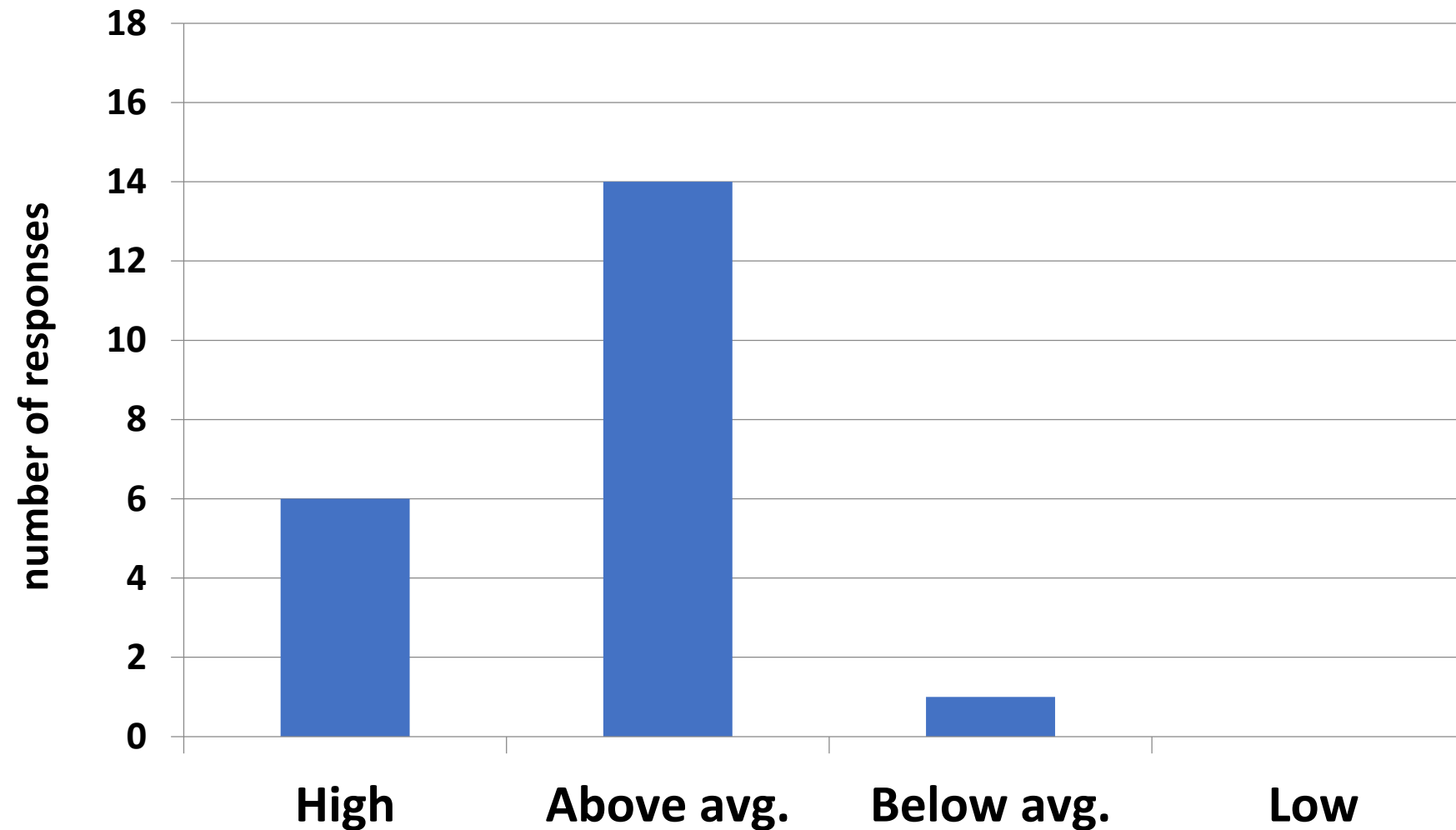


Post Innovation →

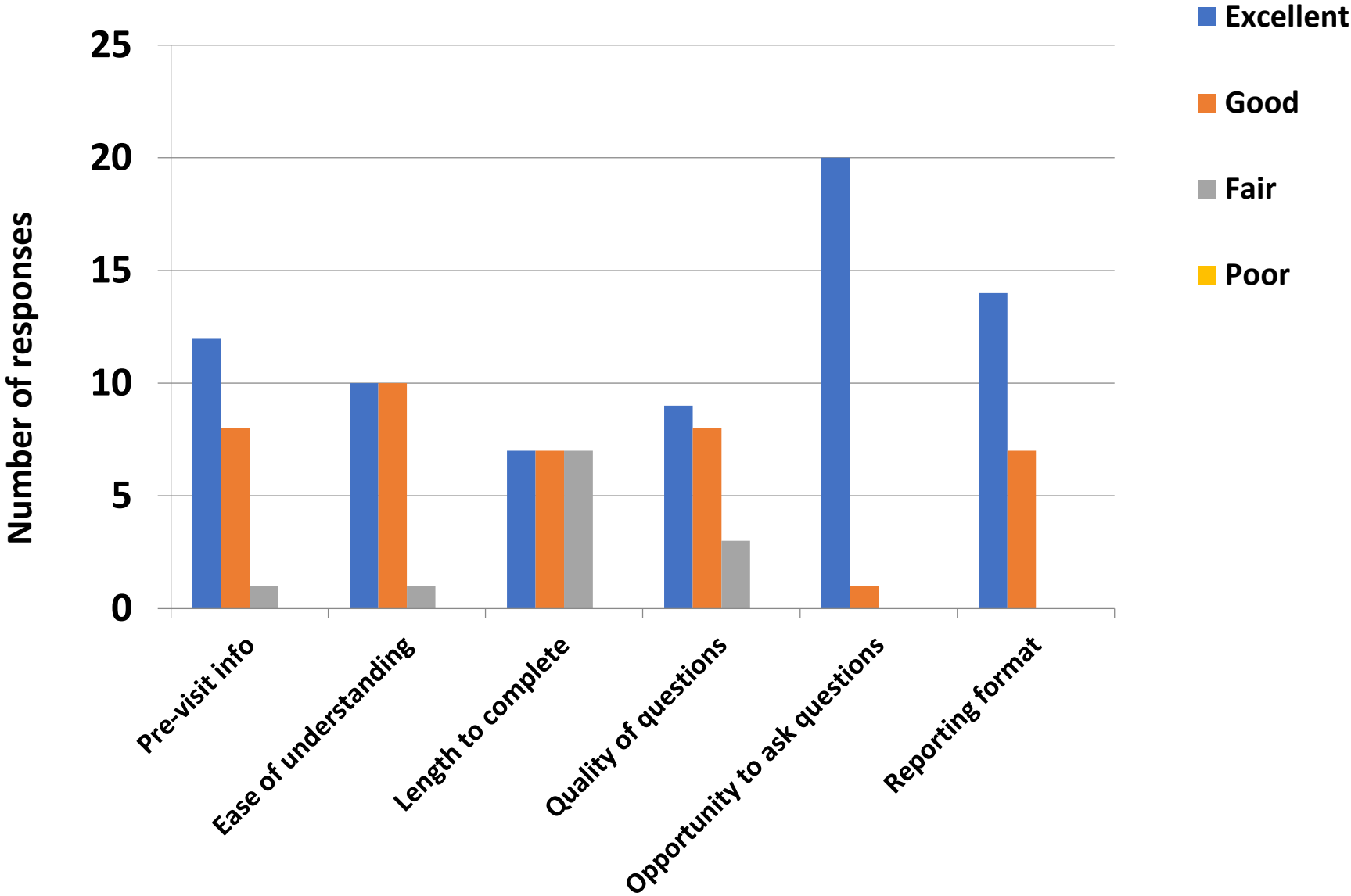


# UK results - farmer feedback on the assessment process

Overall value of the assessment (n = 22)



# UK results - farmer feedback on the assessment process





# Next steps

## Sustainable economic and ecological grazing systems - learning from innovative practitioners (SEEGSLIP) PI Lisa Norton

1. To assess the ecological and agronomic dimensions of Pfl approaches in terms of their current and potential inputs, outputs and impact.
2. To assess the social and economic dimensions of Pfl approaches and their role in the sustainability of the grazing management systems.
3. To assess the extent to which the Pfl innovations rely on being part of a systemic approach to livestock management and whether individual practices could be applied more widely to improve performance within the ruminant livestock sector.



# Summary and conclusions

- The PG tool has proved to provide a comprehensive, yet flexible framework for research and data analysis which explore the delivery of wide-ranging public goods from a range of farming systems.
- The Public Goods Tool has provided a useful approach for developing producer awareness of public goods provision assisted by **joint assessments between researchers and producers**.
- As demonstrated by the results from the iSAGE project, the Public Goods Tool can be used to compare differences within and between systems and a range of practices which impact on public goods. Future work within SEEGSLIP and ReSULTS ([upland-resilience.org](http://upland-resilience.org)) will reveal more differences across systems.
- Use of the PG tool across different farming systems will enable consistency in the assessment of public goods delivery from these systems, as well as highlighting key differences which can lead to tailoring of the tool





Learn more about the ORC Public Goods Tool at:

<https://tinyurl.com/PG-Tool-ORC>



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Department  
for Environment  
Food & Rural Affairs



Centre for  
Ecology & Hydrology

NATURAL ENVIRONMENT RESEARCH COUNCIL

