

# Recommendations for improving the Sustainability of the Sheep and Goat sector:

The iSAGE toolbox helping decision making on farm

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Innovation for Sustainable  
Sheep and Goat  
Production in Europe



National Sheep Association

THE ORGANIC  
RESEARCH  
CENTRE



ELM FARM



# Sustainability

## **Bruntland 1987**

Development that meets the needs of the present without compromising the ability of future generations to meet their own needs

## **FAO**

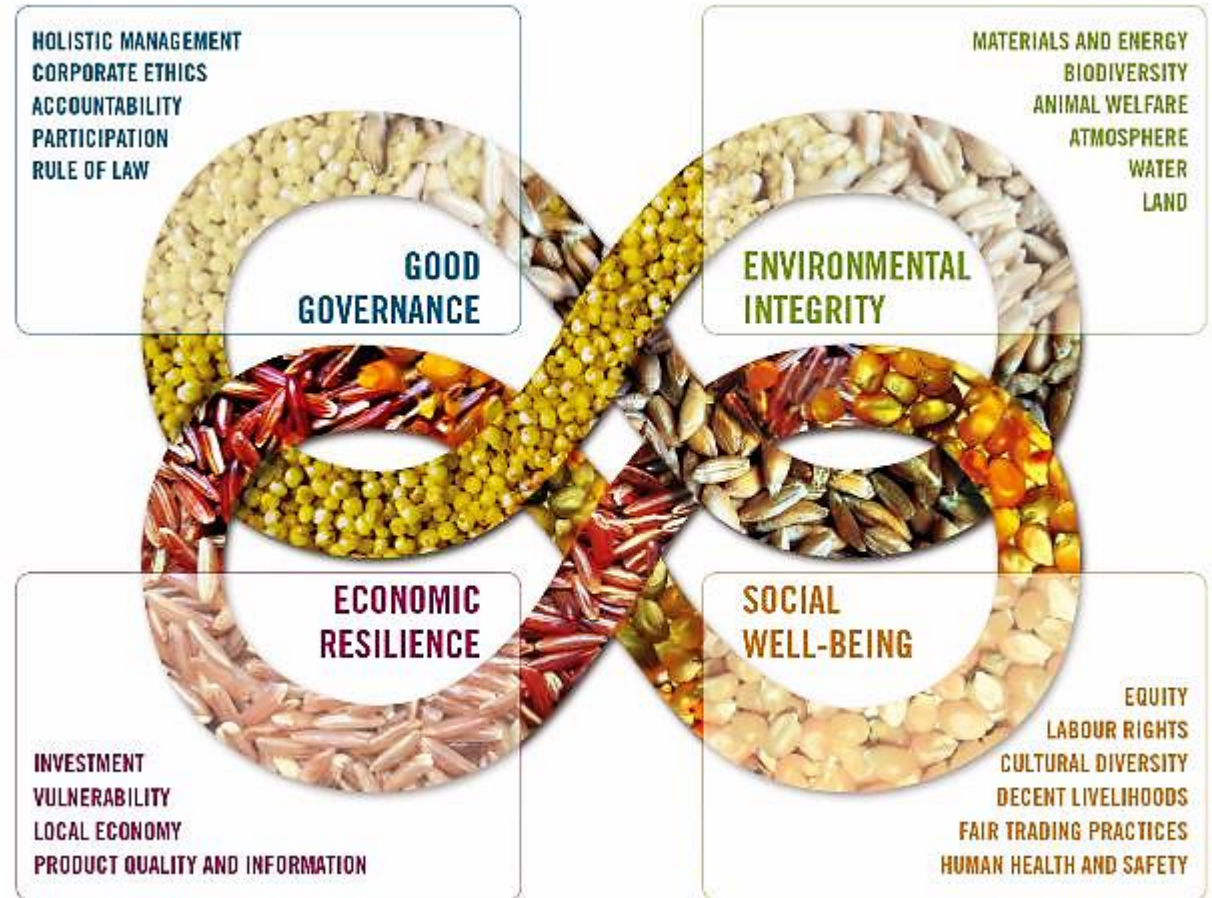
....conserves land, water, plant and animal genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable...



# Sustainability

- FAO SAFA
- 4 pillars approach to sustainability

*Unless good governance is seriously considered, sustainability will remain a mirage*







## **Sustainability Assessments on farm**

- What questions are being asked?
- What answers are being provided?
- How are those answers arrived at?
- What is the purpose?



# The Public Goods (PG) Tool

- Originally developed in 2011 as an assessment tool for organic farmers
- Subsequent research projects have developed it for use within a variety of systems



# The Public Goods (PG) Tool

- Multi criteria, analysis based assessment
- Immediate results
- Mixture of quantitative and qualitative indicators
- Simple programming in Excel-spreadsheet

Non weighted averages



# The iSAGE PG Tool

## LITERATURE REVIEW

**Outcome and process indicators**

## INDICATOR SURVEY WITH EXPERTS

**Greece, UK, France, Italy, Spain, Finland, Turkey**

**35 responses**

## TOOL ADAPTATION

**Social, animal welfare and governance indicators**

## ON-FARM TESTING

**2 x farms in Greece, UK, France, Italy, Spain**



# Themes (spurs) under the 4 pillars

ENVIRONMENTAL INTEGRITY	ECONOMIC RESILIENCE	SOCIAL WELLBEING	GOOD GOVERNANCE
Agricultural Systems Diversity	Farm Business Resilience	Social Capital	Governance
Agri-Environmental Management	Food Security		
Animal Health Management			
Animal Welfare Management			
Energy and Carbon			
Fertiliser Management			
Soil Management			
Landscape and Heritage Features			
Water Management			





# PG Tool – conducting the assessment



**Structure:** On farm interview, between researcher and farmer.

**Duration:** 3-4 hours  
(including 30 min farm tour)

**Goal:** Promote discussion around sustainability and what works for an individual business

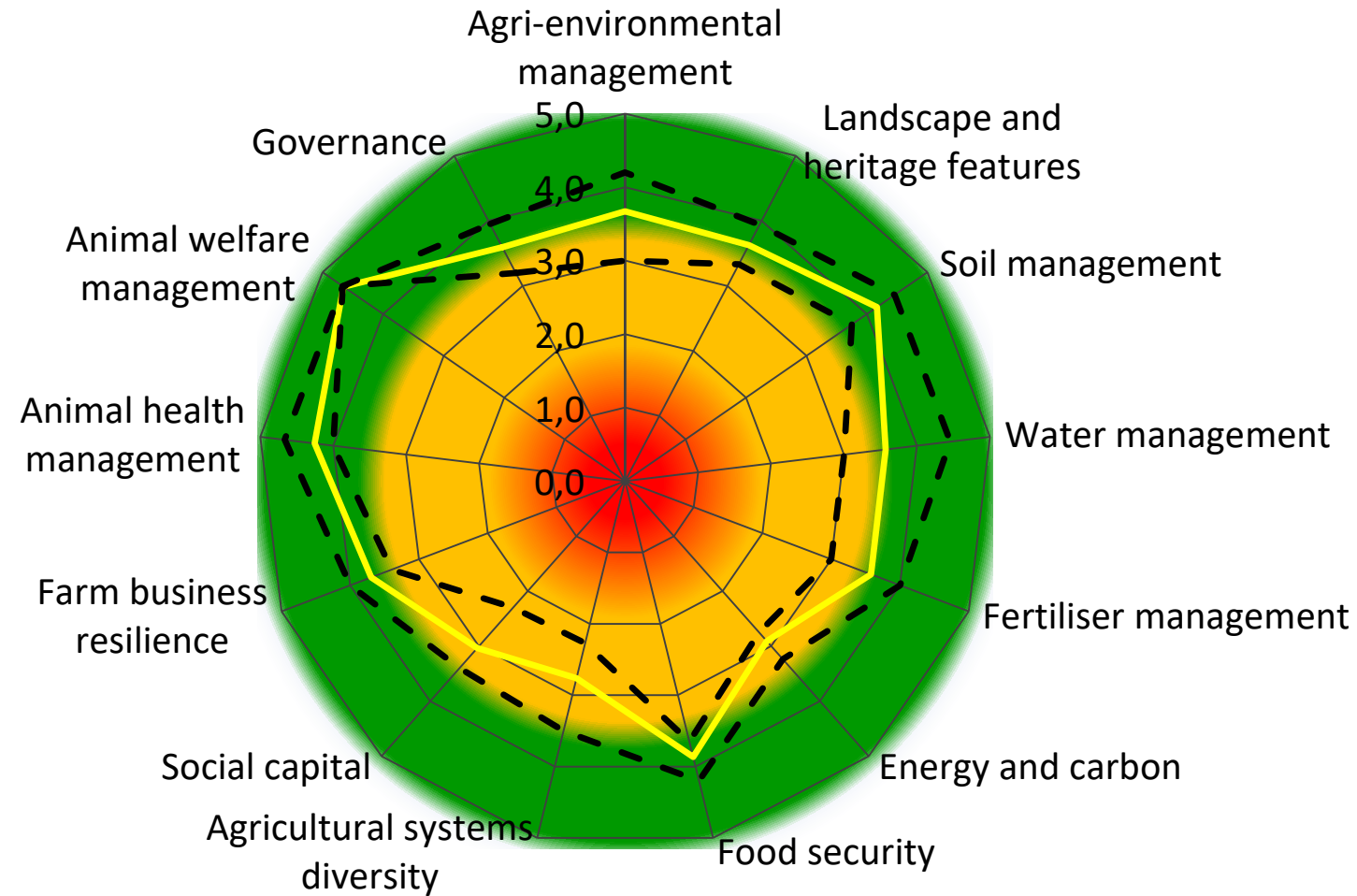


# How does the tool work?

- Farmers answer 174 questions associated with the 13 spurs
- Each answer is ranked on a **1-5 scale**
- An overall average for each spur is generated
- The results are presented in a radar diagram



# PG Tool – results





# iSAGE PG Tool results

- Scores provide an indication of current performance
  - 1 = poor performance
  - 5 = very good performance
- Based upon industry recommendations and benchmarks
- Providing a holistic overview of the farm business

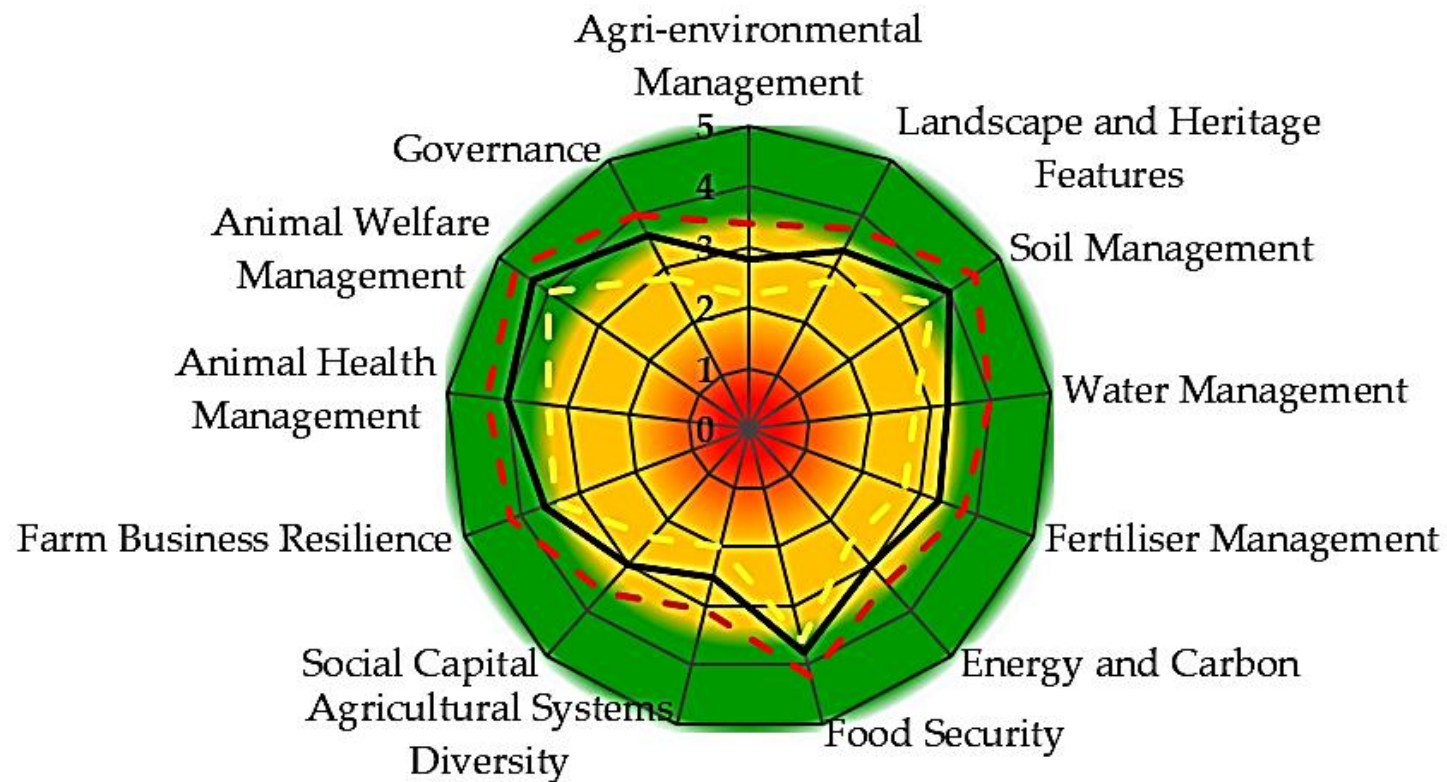


# Median values for sheep sector

Spur	Median
Agri environmental management	2.9
Landscape and Heritage	3.3
Soil management	4.0
Water management	3.3
Fertiliser management	3.3
Energy and Carbon	3.0
Food Security	3.8
Agricultural Systems Diversity	2.5
Social capital	3.0
Farm business resilience	3.6
Animal Health management	4.0
Animal Welfare management	4.3
Governance	3.6



## SHEEP INDUSTRY



--- UPPER Q

— MEDIAN

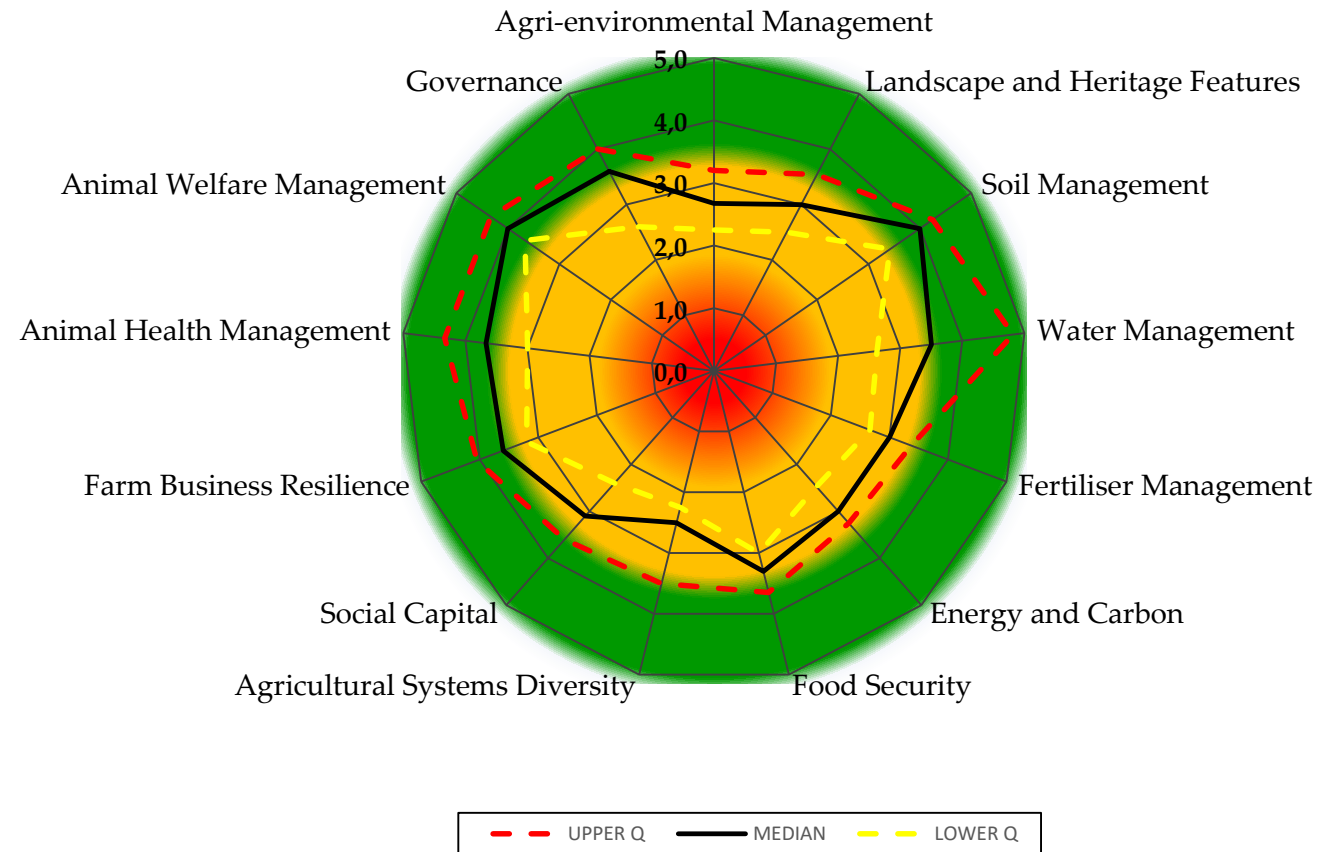
--- LOWER Q



# Median values for goat sector

Spur	Median
Agri environmental management	2.7
Landscape and Heritage	3.0
Soil management	4.0
Water management	3.5
Fertiliser management	3.0
Energy and Carbon	3.0
Food Security	3.3
Agricultural Systems Diversity	2.5
Social capital	3.1
Farm business resilience	3.6
Animal Health management	3.7
Animal Welfare management	4.0
Governance	3.6

## GOAT INDUSTRY





# Remember

The PG Tool

- provides a **snapshot** of **current** sustainability performance
- Raises awareness
- Stimulates discussion





A group of people, including men and women, are gathered around a metal pen containing several white sheep. They appear to be observing or discussing the animals. The background shows a green field and a dark vehicle. A semi-transparent circular overlay is positioned on the left side of the image, containing the text 'Next Steps' and a list of three items.

# Next Steps

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- Acting on the results
- Self assessment
- Where to get the information?





# 1. SIGNPOSTS TO SUSTAINABILITY

## iSAGE Toolbox 2. SAGEGUARD

2.1 SAGEGUARD.NET

2.2 SAGEGUARD CARDS

Sageguard.net



# Developing the Toolbox

- iSAGE partners select sustainability indicators that they feel are relevant from the PG tool ( iSAGE annual meeting)
- Researchers select sustainability indicators from PG tool
- Final suite of indicators used to develop the Toolbox using the PG tool as the basis



# 1. SIGNPOSTS TO SUSTAINABILITY

- PG Tool adapted for online self assessment
- Hierarchical process: dimensions, themes, sub themes, questions
- Series of questions: **Yes** **No**
  - + a third option when necessary, e.g. unknown/not relevant



# SIGNPOSTS TO SUSTAINABILITY

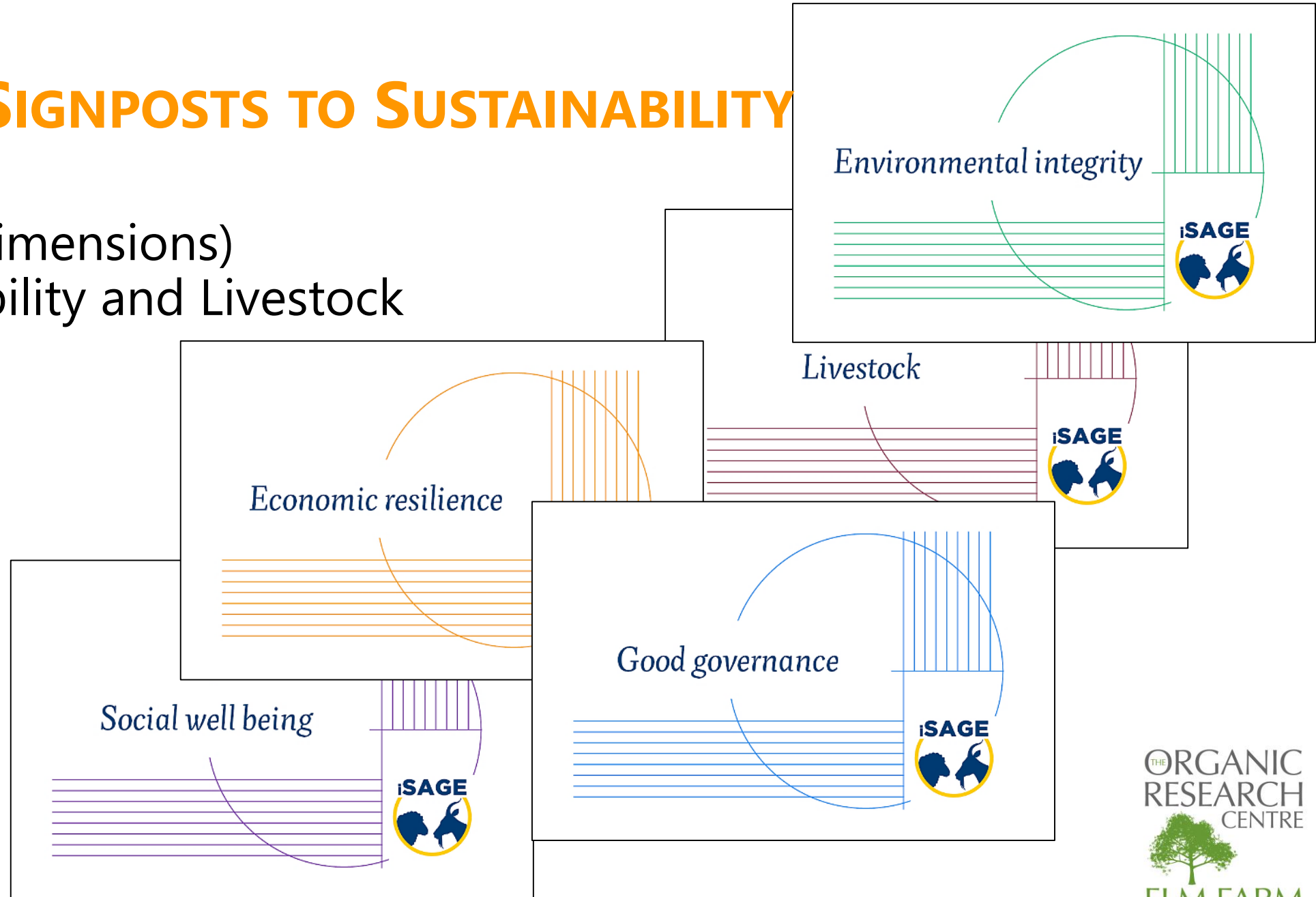


Sageguard.net



# 1. SIGNPOSTS TO SUSTAINABILITY

**4 pillars** (dimensions)  
of Sustainability and Livestock





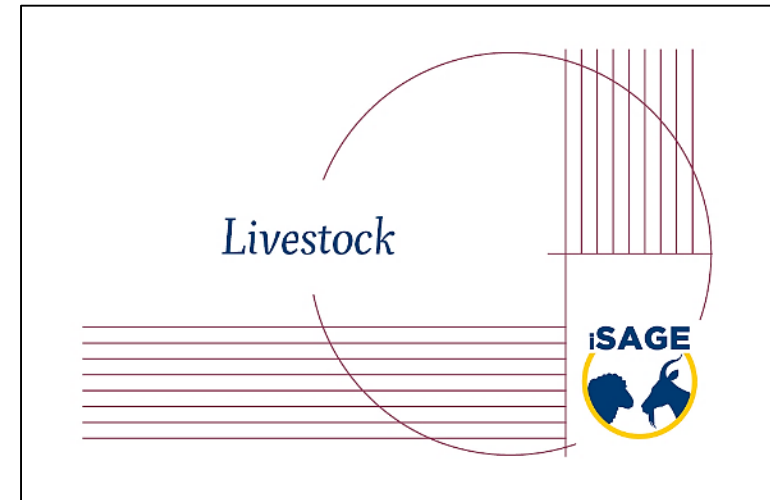


# 1. SIGNPOSTS TO SUSTAINABILITY

Each dimension has **3 associated themes**

## Livestock

- Animal Health
- Animal Welfare
- Livestock Management



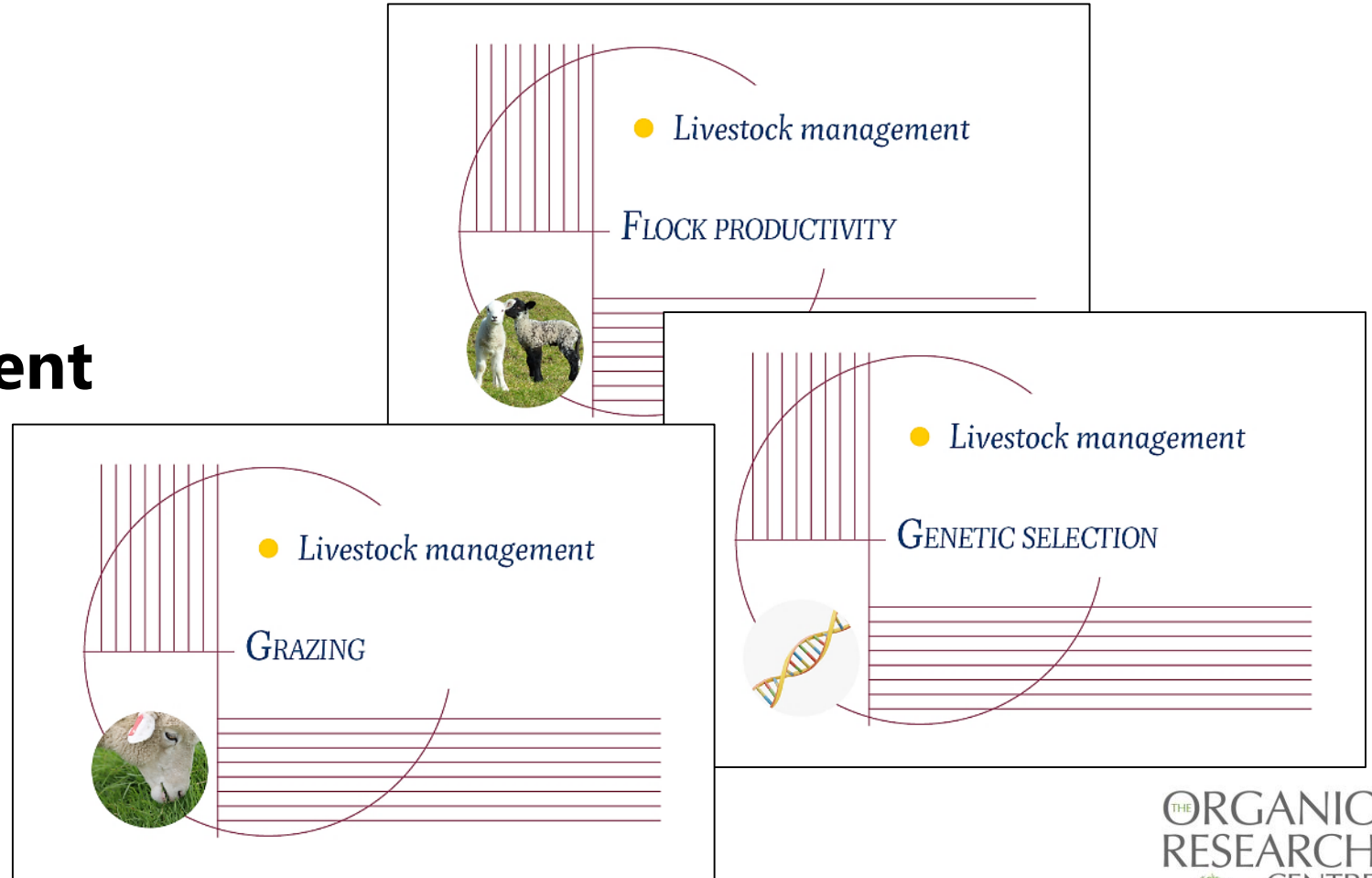


# 1. SIGNPOSTS TO SUSTAINABILITY

Each theme has **3 sub themes**

## Livestock management

- Flock productivity
- Genetic selection
- Grazing





# 1. SIGNPOSTS TO SUSTAINABILITY

Series of indicators associated with each sub theme

## **Flock productivity**

- Lambing success
- Weaning success
- Culling practices





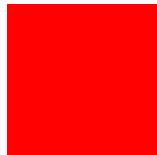
# 1. SIGNPOSTS TO SUSTAINABILITY – question/answer

Answer the question associated with the indicator

## Lambing success

✓ Do you lose over 5% of lambs between birth and weaning?

**YES**



**NO**





# 1. SIGNPOSTS TO SUSTAINABILITY – results

## summary

Environmental Integrity					
Soil	<a href="#">Erosion</a>		<a href="#">Compaction</a>		<a href="#">Quality</a>
Water	<a href="#">Use</a>		<a href="#">Availability</a>		<a href="#">Water Quality</a>
Atmosphere	<a href="#">Direct pollutants</a>		<a href="#">Indirect pollutants</a>		<a href="#">Management of pollutants</a>
Farmland Biodiversity	<a href="#">Flora and fauna</a>		<a href="#">Diversity of production</a>		<a href="#">Trees and hedgerows</a>
Cultural and Heritage	<a href="#">Historical features</a>		<a href="#">Genetic diversity</a>		<a href="#">Traditional livestock management</a>
Environmental Management	<a href="#">Conservation plans</a>		<a href="#">Ecosystem connectivity</a>		<a href="#">Ecosystem enhancing practices</a>
Fertiliser	<a href="#">Soil testing</a>		<a href="#">Fertiliser plan</a>		<a href="#">Nutrient balance</a>
Energy and Carbon	<a href="#">Renewable energy</a>		<a href="#">Vehicles</a>		<a href="#">Carbon</a>
Waste Management	<a href="#">Recycling</a>		<a href="#">Reducing</a>		<a href="#">Hazardous products</a>
Livestock					
Flock	<a href="#">Breed</a>		<a href="#">Body Condition Score</a>		<a href="#">Replacements</a>
Health Plan	<a href="#">Health plan</a>		<a href="#">Antibiotics</a>		<a href="#">Parasites</a>
Disease Incidence	<a href="#">Flock/herd health</a>		<a href="#">Quarantine</a>		<a href="#">Proactive management</a>
Feeding Systems	<a href="#">Intensive systems</a>		<a href="#">Concentrates</a>		<a href="#">Forage</a>
Housing Characteristics	<a href="#">Condition of housing</a>		<a href="#">Space</a>		<a href="#">Water Availability</a>





## 2. **SAGEGUARD**

- Sageguard.net  
Decision support tool
- Find information to help move towards a more sustainable system
- A set of links to further information provided for each subtheme / question



# Sageguard.net



*Sageguard.net*  
farmers' decision-maker



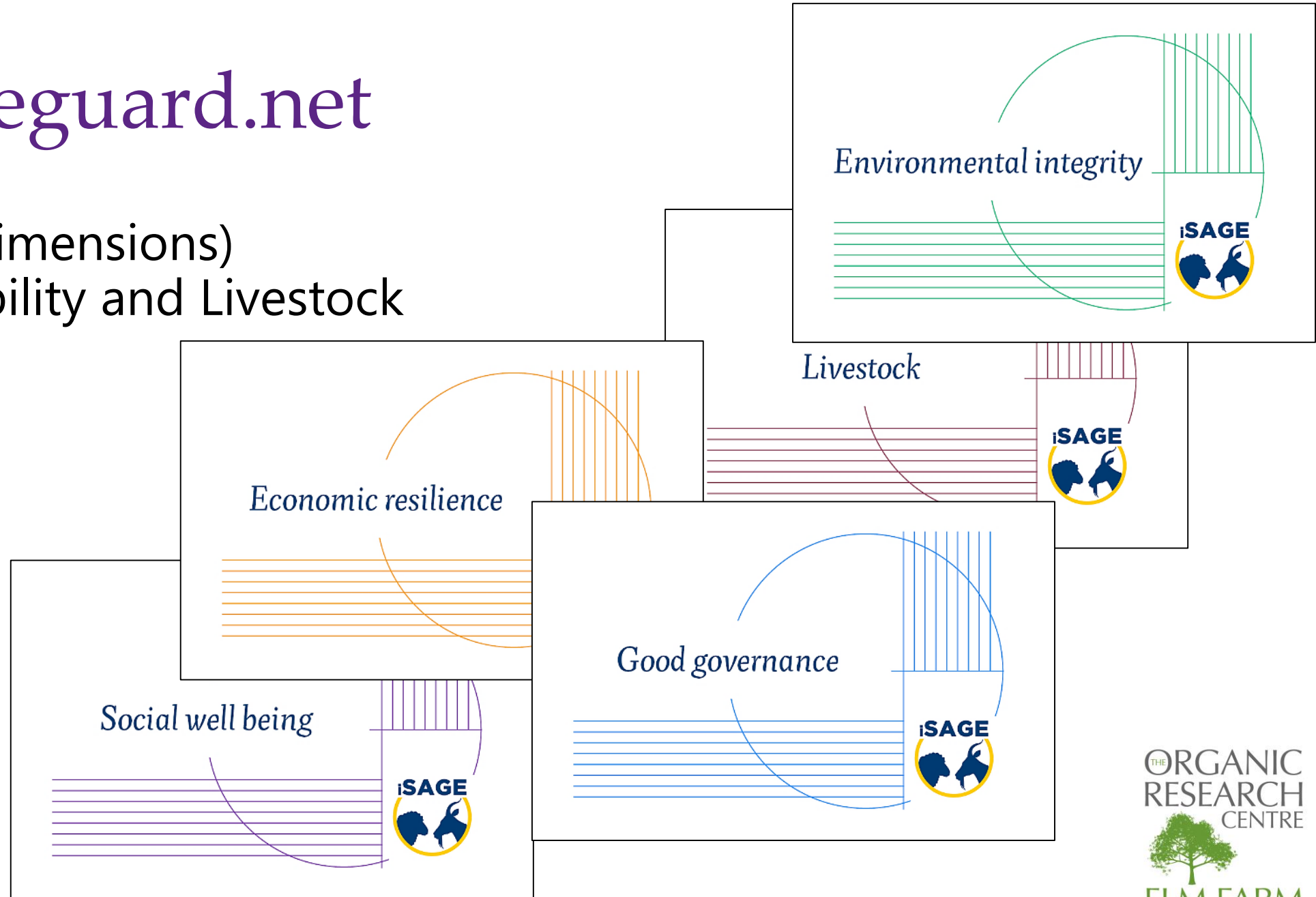
## 2.1 Sageguard.net

- A platform for developing knowledge within the field of sustainable sheep and goat production
- Helps answer your questions and provide guidance around how to sustainably produce sheep and goats within Europe
- Navigate through the hierarchical levels of sustainability to reach your answers, using the Dimensions Cards or the Menu on the top right of your screen



# Sageguard.net

## 4 pillars (dimensions) of Sustainability and Livestock



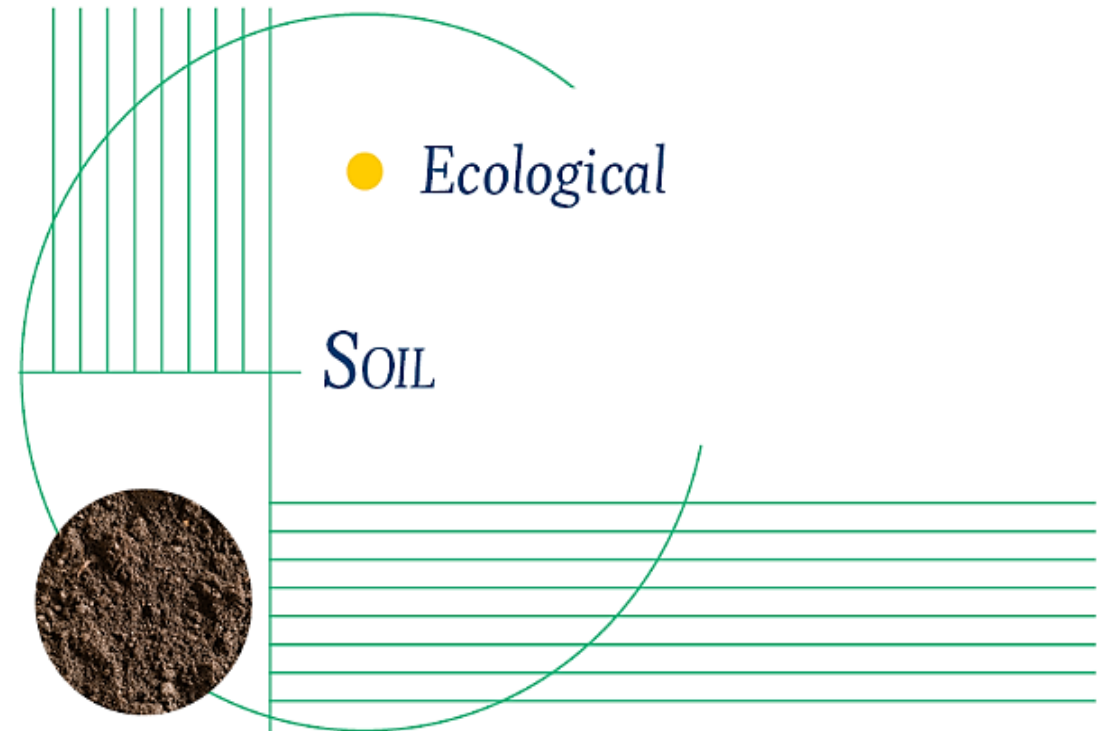


## 2.1 SAGEGUARD.NET

# Ecological

[Sageguard.net](#) > [Environmental integrity](#) > Ecological

- Dimension  
*Environmental integrity*
- **Theme**  
***Ecological***
- Sub Theme  
*Soil*





# 2.1 SAGEGUARD.NET

**Soil erosion** is the process by which soil primary particles and aggregates are removed and lost from their point of origin by wind or water, or even mass wasting from gravitational forces and agricultural activities.

In agricultural soils, **compaction** is caused by compression from machinery traffic or stock trampling.

**Soil biology** is the study of soil biota and the interactions they have with each other and their environment.

## Erosion

- [Erosion | National Geographic](#)
- [Soil erosion | WWF](#)
- [Soil erosion | Defra](#)
- [Soil erosion | BBC](#)
- [Soil erosion | Heritage Land Bank](#)
- [Soil erosion | Ontario Government](#)

## Compaction

- [Soil compaction | Farmers Weekly](#)
- [Soil compaction | AHDB Dairy](#)
- [Soil compaction | Soil & Water](#)
- [Soil compaction | Väderstad](#)
- [Soil compaction | University of Wisconsin](#)

## Quality

- [Soil quality | Nature Education](#)
- [Soil quality | Soil Association](#)
- [Soil quality | Swarm Hub](#)
- [Soil quality | Science Direct](#)
- [Soil quality | Australian Government](#)





# Link example Sageguard.net

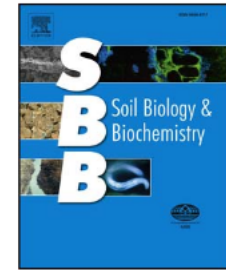
Soil Biology and Biochemistry 120 (2018) 105–125



Contents lists available at [ScienceDirect](#)

## Soil Biology and Biochemistry

journal homepage: [www.elsevier.com/locate/soilbio](http://www.elsevier.com/locate/soilbio)



Review Paper

### Soil quality – A critical review

Else K. Bünemann<sup>a,\*</sup>, Giulia Bongiorno<sup>a,b</sup>, Zhanguo Bai<sup>c</sup>, Rachel E. Creamer<sup>b</sup>, Gerlinde De Deyn<sup>b</sup>, Ron de Goede<sup>b</sup>, Luuk Fleskens<sup>d</sup>, Violette Geissen<sup>d</sup>, Thom W. Kuyper<sup>b</sup>, Paul Mäder<sup>a</sup>, Mirjam Pulleman<sup>b,e</sup>, Wijnand Sukkel<sup>f</sup>, Jan Willem van Groenigen<sup>b</sup>, Lijbert Brussaard<sup>b</sup>







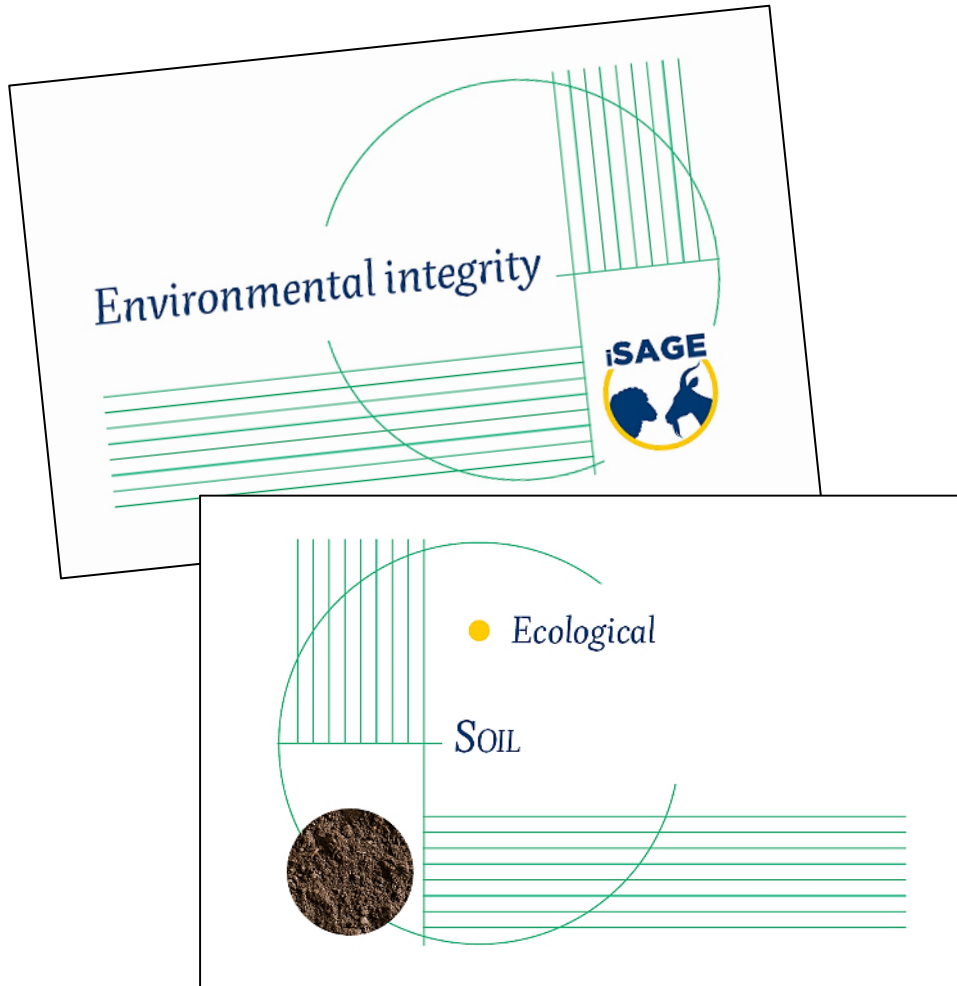
## 2.2 SAGEGUARD CARDS

- An offline resource arranged in a similar manner to Signposts to Sustainability
- Designed to provoke thought and discussion





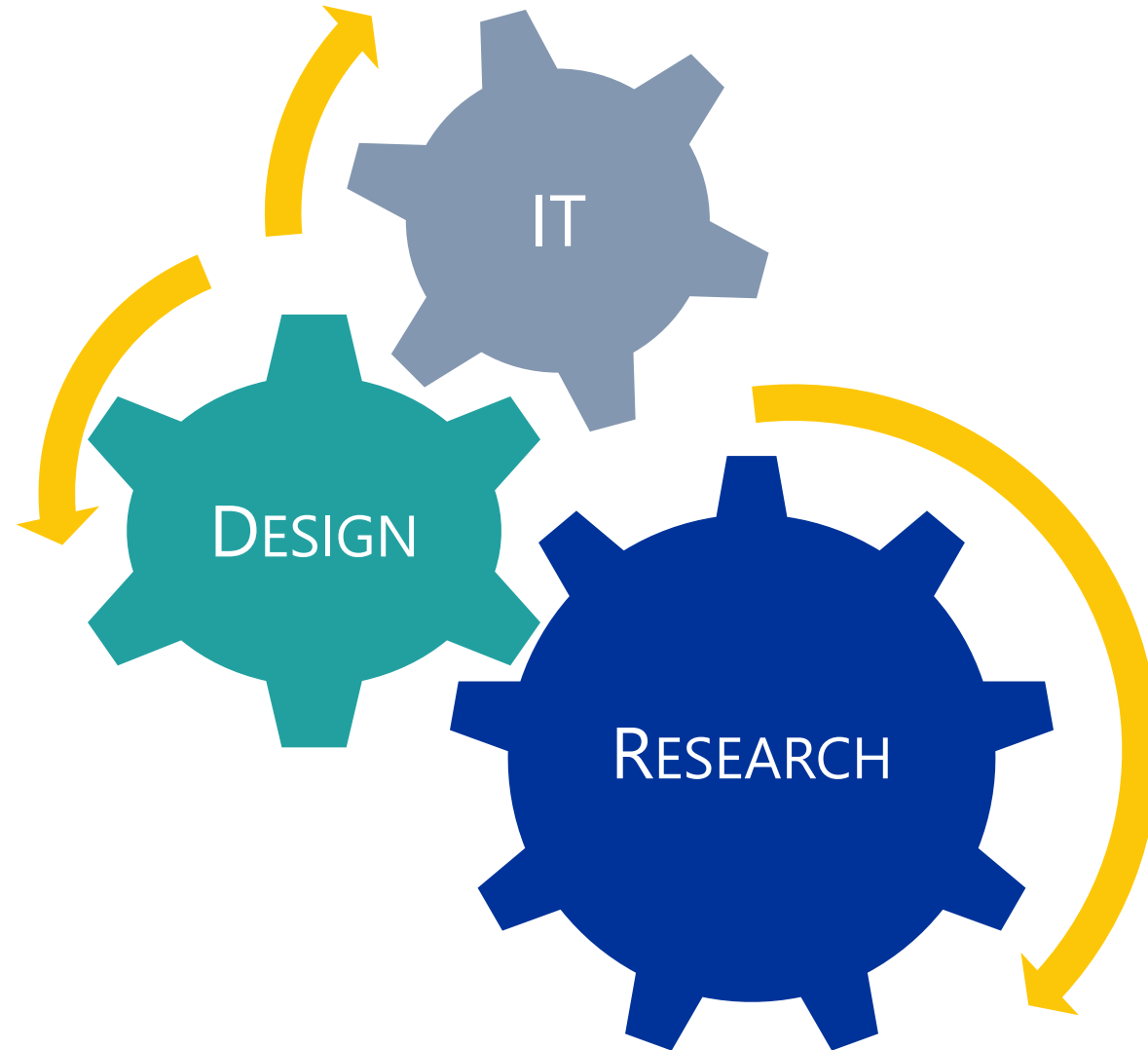
## 2.2 SAGEGUARD CARDS



<b>EROSION</b> Are there any signs of erosion on your farmland?	<b>COMPACTION</b> Are there any signs of compaction across your fields?
<b>QUALITY</b> Have you considered <i>soil biology</i> when managing soil quality?	<b>1</b> <a href="http://sageguard.net">sageguard.net</a>



# Toolbox Team







# Sustainability on your farm

Each farm has a unique set of circumstances...







# Further information

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*Thank ewe!*

