

PATHWAYS

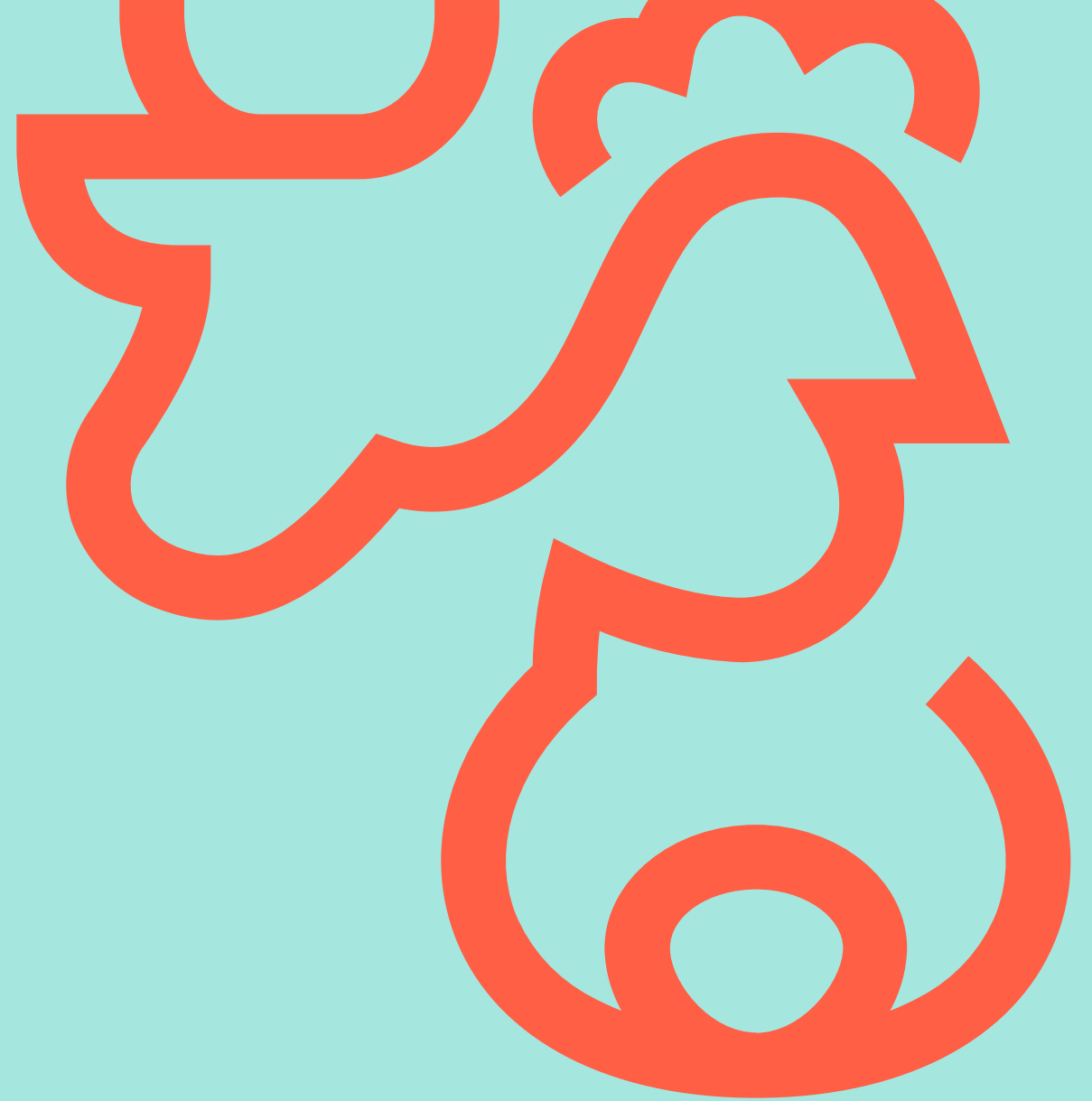
Pathways for transitions to sustainability
in livestock husbandry and food systems

Early results from the project

15th November 2023

Laurence Smith, project co-ordinator

13th Animal Task Force Seminar, November 15th, 2023 - Brussels

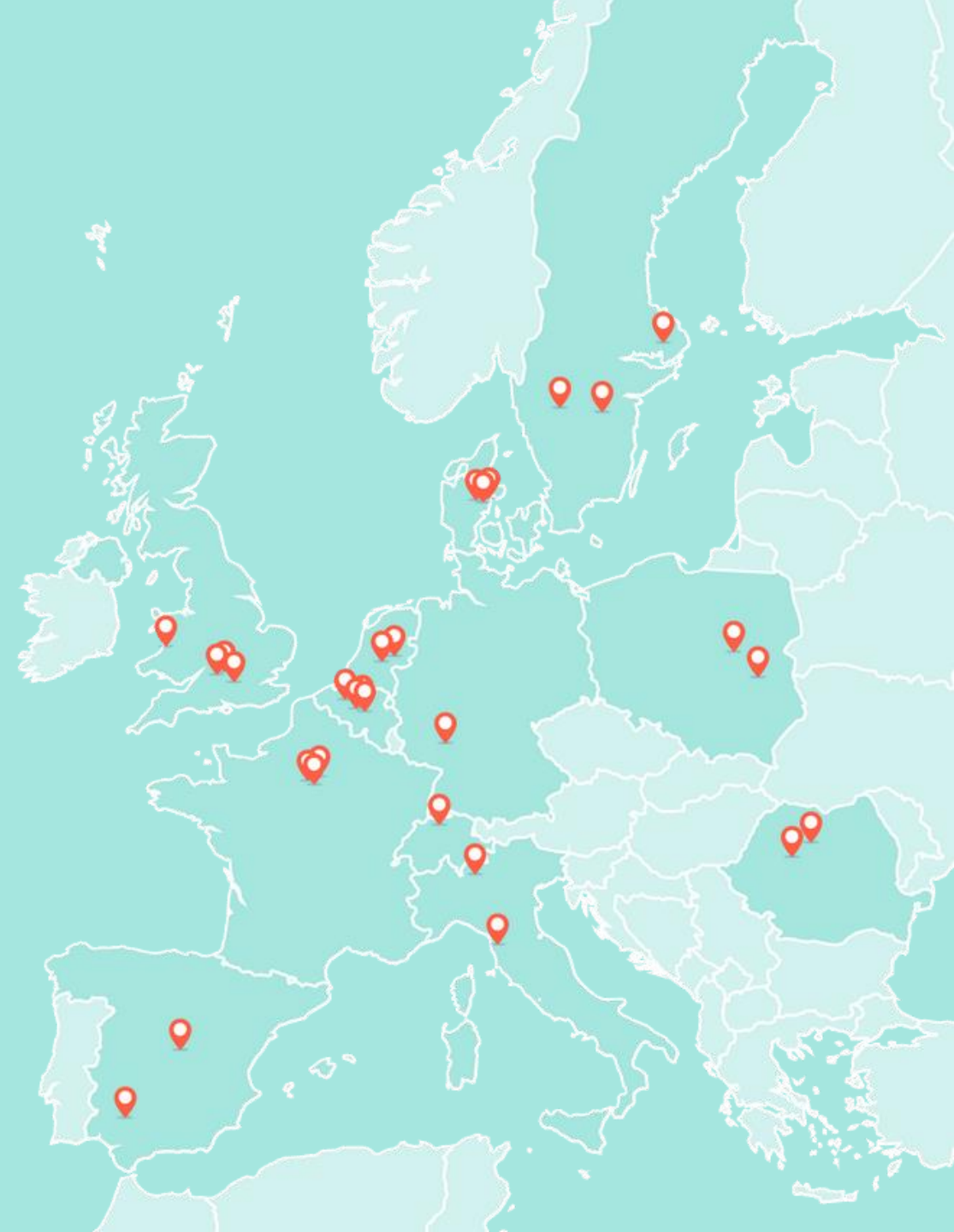


What is PATHWAYS?

- A five-year 9M EUR project funded by the European Union Horizon 2020 Work programme
- Coordinated by SLU, 31 partners
- Overarching aim is to “inform policy, research and business strategies in support of a transition to more sustainable livestock production and consumption”
- Project start date 1 September 2021

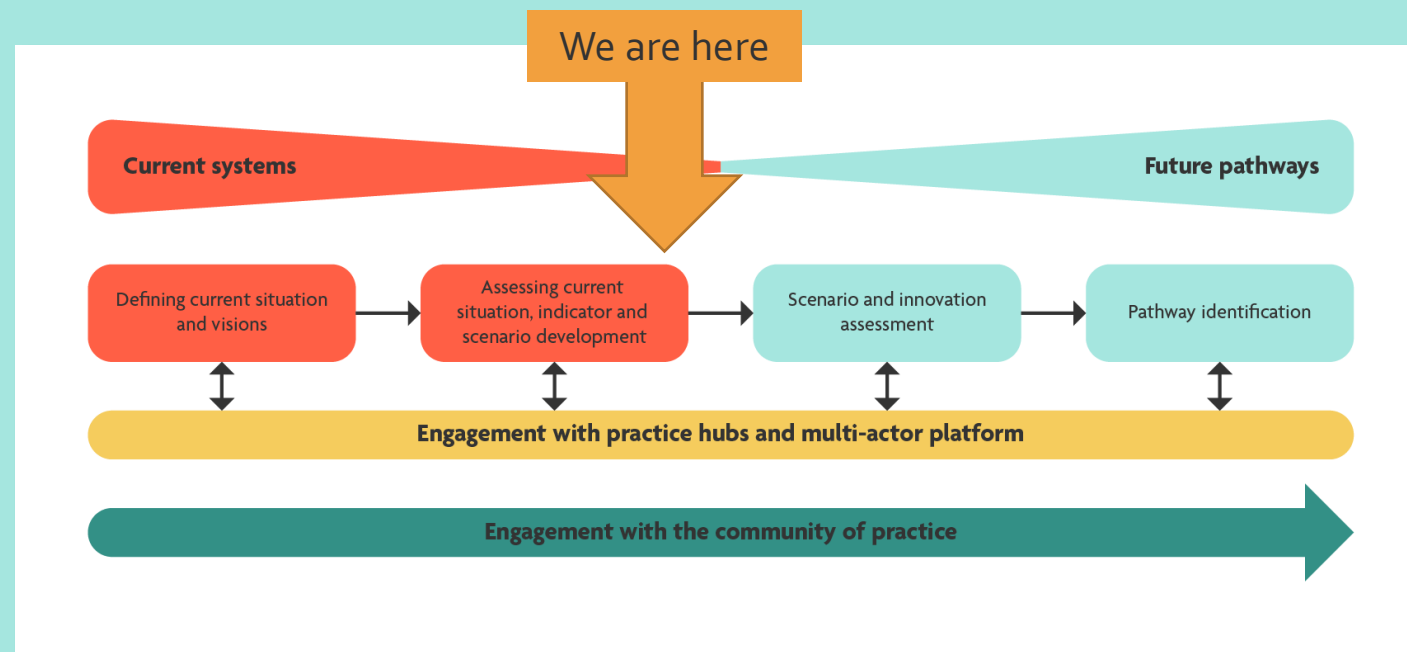


CONSORTIUM PARTNERS



Objectives

1. To develop **innovative holistic sustainability assessment methodologies** to enable livestock systems assessments from farm to fork
2. To **identify and evaluate innovations** within livestock systems through practice hubs and stakeholder engagement
3. To **co-design scenarios and associated transition pathways** with multi actors for a sustainable European livestock sector
4. To **support a timely effective transition** to sustainable livestock systems in Europe



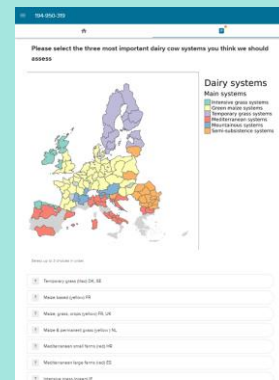
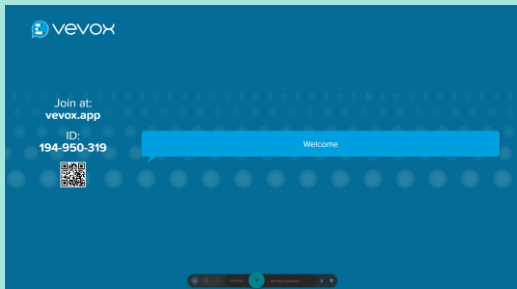
Early results - the current PATHWAYS scenarios:

- **Feed no food:** feed-food competition is reduced to its minimum, while agrobiodiversity conservation is integrated into agricultural practices
- **Efficiency first:** the focus is on increased feed conversion efficiency of animal productions as a key lever to reach environmental performance. The search for efficiency extends beyond the livestock systems, to the processing industry, that transitions following a strong “industrial ecology” approach
- **Rural renaissance:** livestock sector transformations contribute to revitalize rural communities through the maintenance of a strong agricultural dynamics across landscapes, a greater level of autonomy for farmers that deliver not only food but also a range of ecosystem services.
- **High animal welfare:** the objective is to maximize the positive experience of animals throughout the value chains, and to increase animals agency over their own lives, e.g., by providing interesting indoor and outdoor spaces or robotic milking, which encourages individual choice.
- **A stockfree Europe:**
 - A “counter-factual” scenarios to identify “what we miss” when livestock disappears from a variety of viewpoints: biophysically, socially, economically, politically



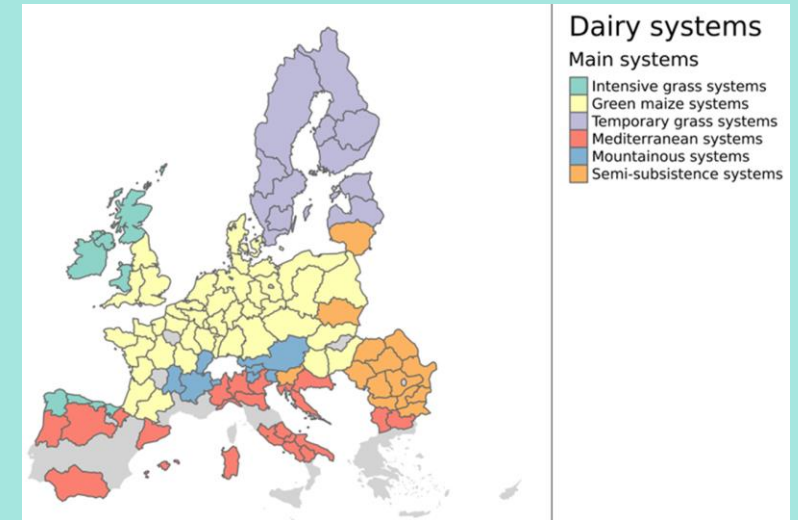
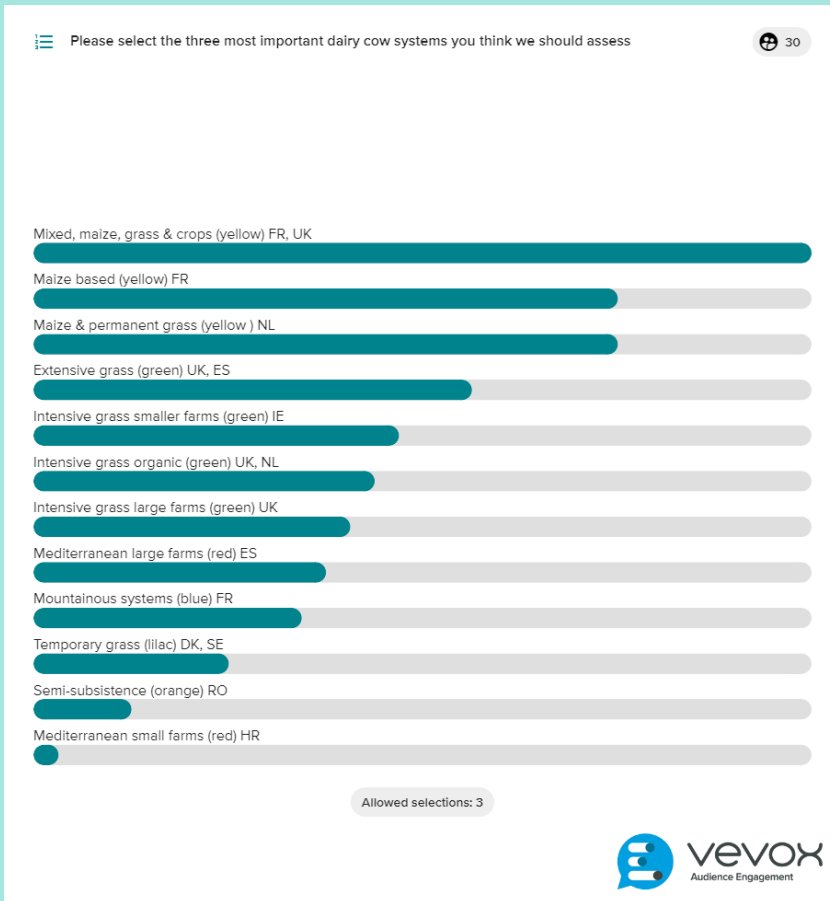
Early results: characterisation of European livestock systems

- We needed to select final systems for modelling as “baseline” Pathways systems
- Limited to around 20-30 systems – main systems only
- Three main datasets were used:
 - **Eurostat database** (e.g. livestock numbers and land use)
 - **Farm Accountancy Data Network (FADN)** for technical variables
 - **FADN** for socio-economic data (e.g. labour, input/output ratios and subsidies)
- Plus a survey launched in Dec 2022 to select preferred systems for each livestock type



Example characterisation results: Dairy systems in Europe

Survey results



Selected systems

System

Mixed maize grass & crops (yellow) FR

Maize & permanent grasslands (yellow) NL/UK

Intensive grass smaller farms (green) IE/UK

Mediterranean large farms (red) ES

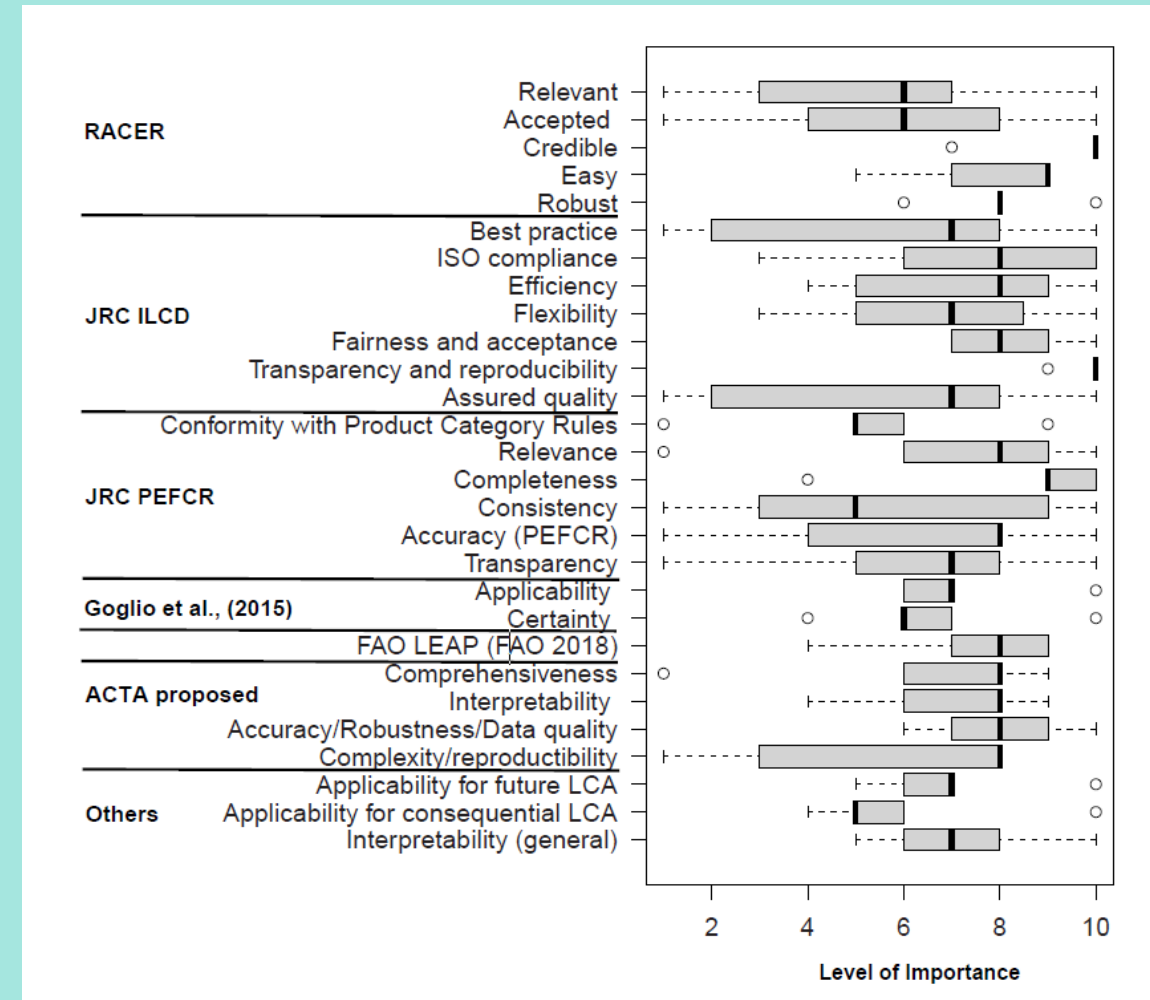
Extensive grass (green) UK, ES

Mountainous system (blue) FR

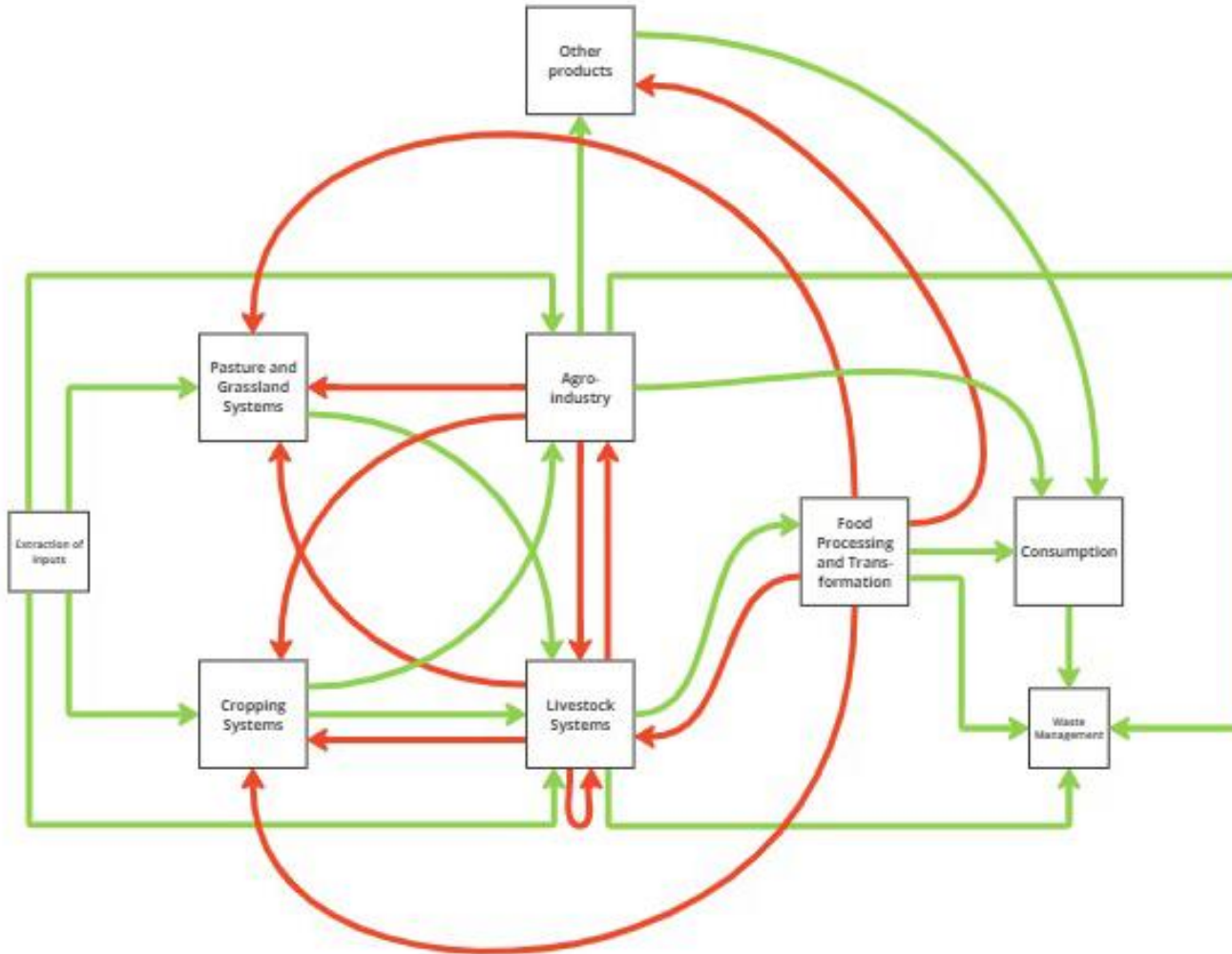
Early results: prioritisation of criteria for assessing LCA methods

- The following criteria were prioritised:
 - *Transparency and Reproducibility*
 - *Completeness*
 - *Fairness and Acceptance*
 - *Robustness*
- A separate “Accuracy” criterion was also formulated, following recommendations from the expert group
- Several experts reported “soil C observations depend on appropriate timescales and long term monitoring”
- It was also noted that “**several criteria were voted for by experts because of the framework they belong to (ie. PEF CR) rather than the clarity of the definition**”

Box plot of expert responses to a survey identifying general criteria for the assessment of LCA methods for livestock systems and products



Early results: review of LCA methods



= well captured in livestock system LCAs



= poorly captured in livestock system LCAs

- Improved LCA methods, identified through **literature review** and **expert consultation**,

Key topics:

- **SG1** Circularity
- **SG2** Biodiversity
- **SG3** Animal welfare
- **SG5** Soil C
- **SG6** Soil N₂O emissions
- **SG7** Manure emissions
- **SG8** Enteric fermentation

Improved methods to be applied to **baseline systems** and innovative **“case studies”**

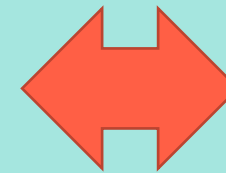
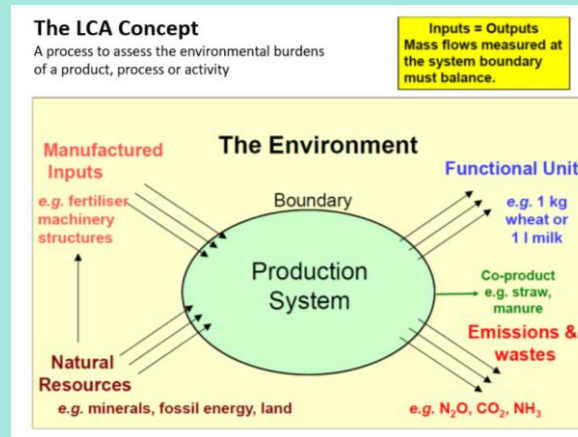
Key next steps:

Translating the qualitative scenarios into modelled parameters / variables

MAGNET & SOL-M



Application of LCA (attributional and consequential)



Future value chains and food baskets

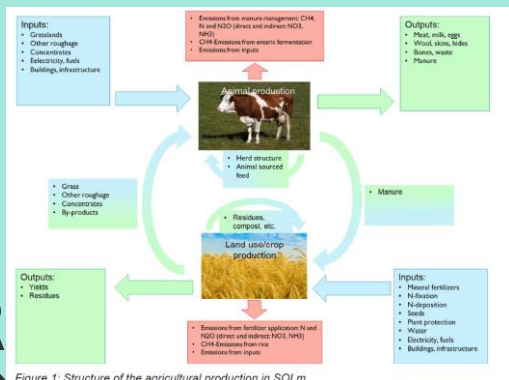
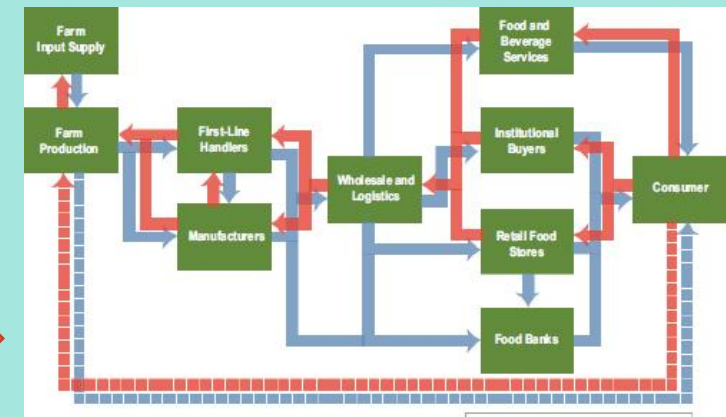
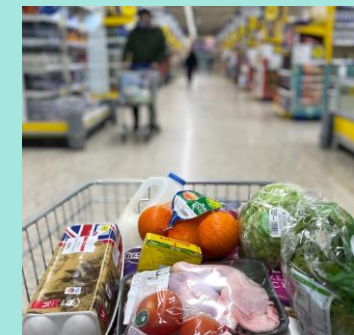


Figure 1: Structure of the agricultural production in SOLM



Key next steps: data analysis of 100 innovative case studies

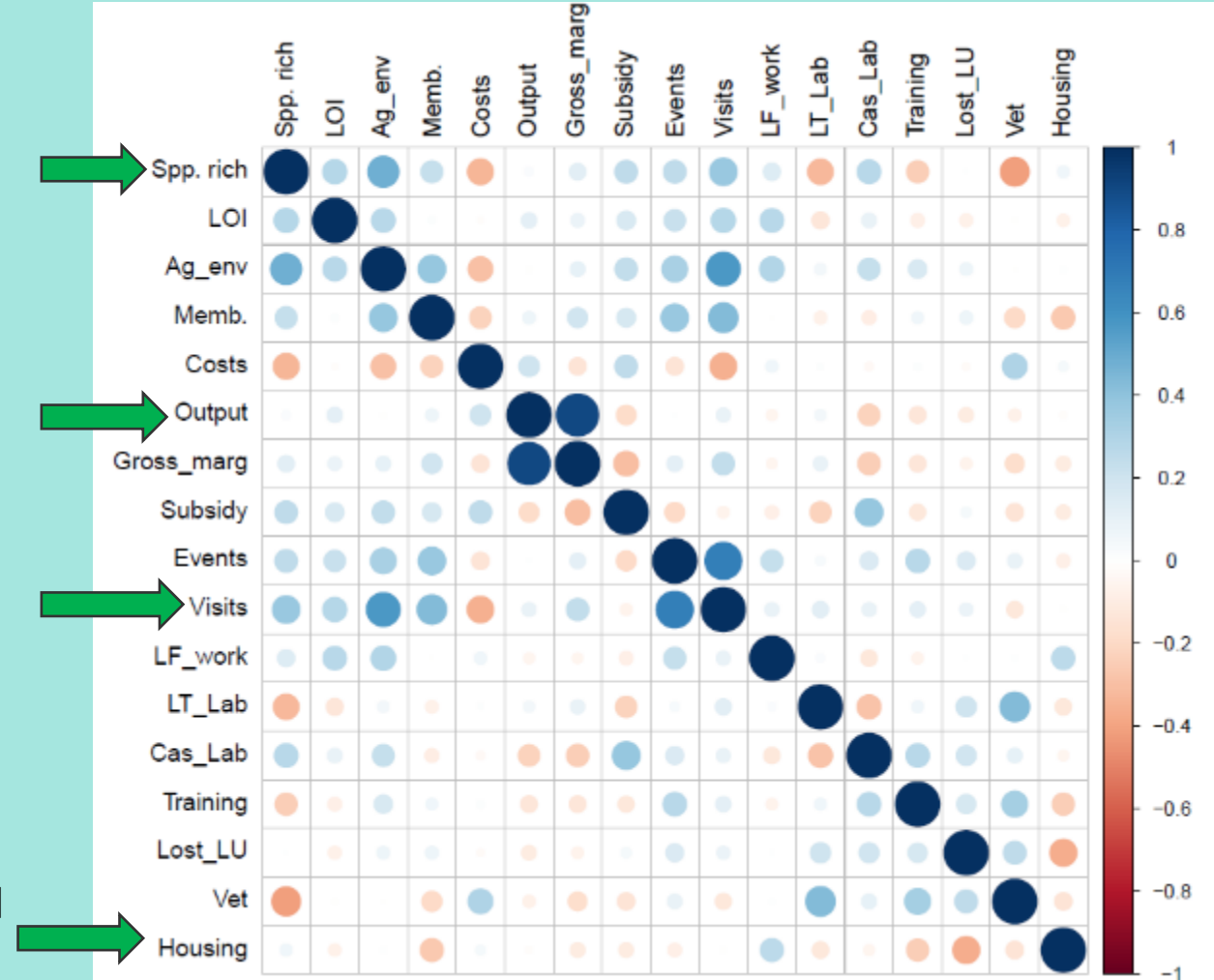
Correlation plot of PG tool and field data

As **grassland species richness** increases **total costs** and farm spend on **veterinary medicines and vet fees** decreases ($R -0.33, P < 0.05$, $R -0.42, P < 0.01$)

Total **income** from livestock highly correlated with the total farm **gross margin** ($R 0.91, P < 0.01$)

Level of **participation in agri-environment schemes** (Ag_env) positively correlated with the **number of visitors** (Visits, $R 0.57, P < 0.01$)

As **housing condition increased** lost livestock decreased (Lost LU, $R -0.36, P < 0.05$)



In Summary

- Scenario evaluation informs sustainable trajectories for livestock in Europe
- Improved methods needed to make evaluations “fit for purpose” specifically regarding consequential LCA
- Capture of circularity / feedback loops in food systems modelling a key challenge
- Innovation assessments will inform evaluations of “what works” in a range of contexts
- Regular engagement with project processes will maximise synergies and ensure the projects impact

Join us on 7th March 2024 at a mid-term policy form in Brussels to hear more!



About Pathways

With the aim of reducing environmental impacts while addressing societal demands for safe, nutritious and affordable meat and dairy products, [PATHWAYS](#) is about identifying and increasing sustainable practices along the supply and production chains of the European livestock sector. Coordinated by the Swedish University of Agricultural Sciences (SLU) and comprising 28 partners from 12 countries, this 5-year (2021-2026) €9 million Horizon 2020 project contributes to the [EU Farm-to-Fork Strategy](#) which is at the heart of the [EU Green Deal](#).

Get in touch

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