Accounting for diversity while assessing sustainability

Insights from the Walloon bovine sectors

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A necessary transition

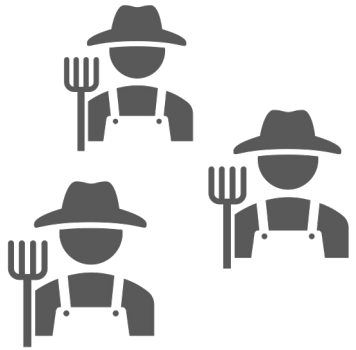
The role and share of livestock productions in our food system are being questioned.

A transition is necessary towards more sustainable livestock systems.

	Negative externalities	Positive externalities
Environmental 	• GHG emissions • Pollution of water and soil resources	• Carbon storage • Contributions to soil fertility
Societal 	• Animal welfare • Human health	• Preserving landscapes • Provision of nutrient-dense food
Economic 	• Economic precarity of some farmers	• Provision of livelihood for many households

Two tools to identify sustainable livestock systems

Diversity assessments



Typology classifications

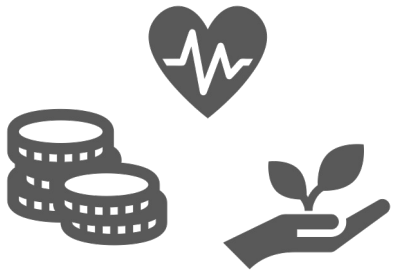
Identify production systems

Mutually reinforcing

Methods

Aims

Sustainability assessments



Indicators

Measure performances

Diversity assessments are key

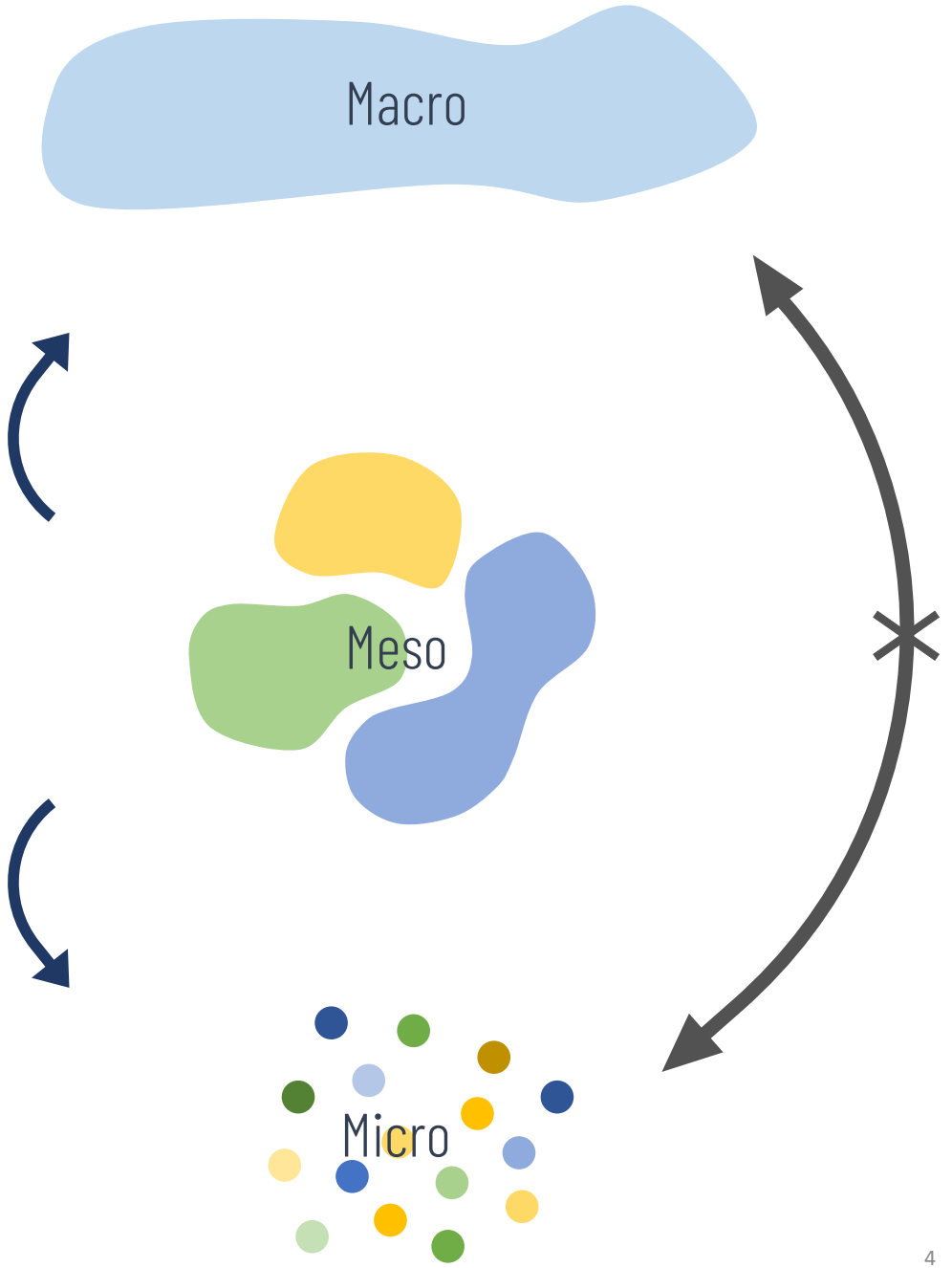
What for…

- *Macro scale* : Necessary for policymakers.
- *Micro scale* : Necessary for farmers.

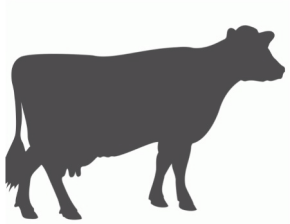
→ How to create a link between both levels ?

Challenges…

- Oversimplification of diversity
- Insufficient representativeness
- Limited accounting of multidimensionality



Scope of the case study

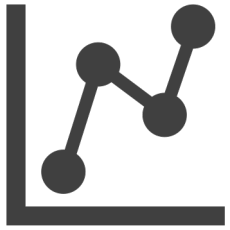


Dairy systems

Beef breeding systems

Wallonia
(Southern Belgium)

Dairy sector : 290 farm observations
Beef breeding sector : 216 farm observations



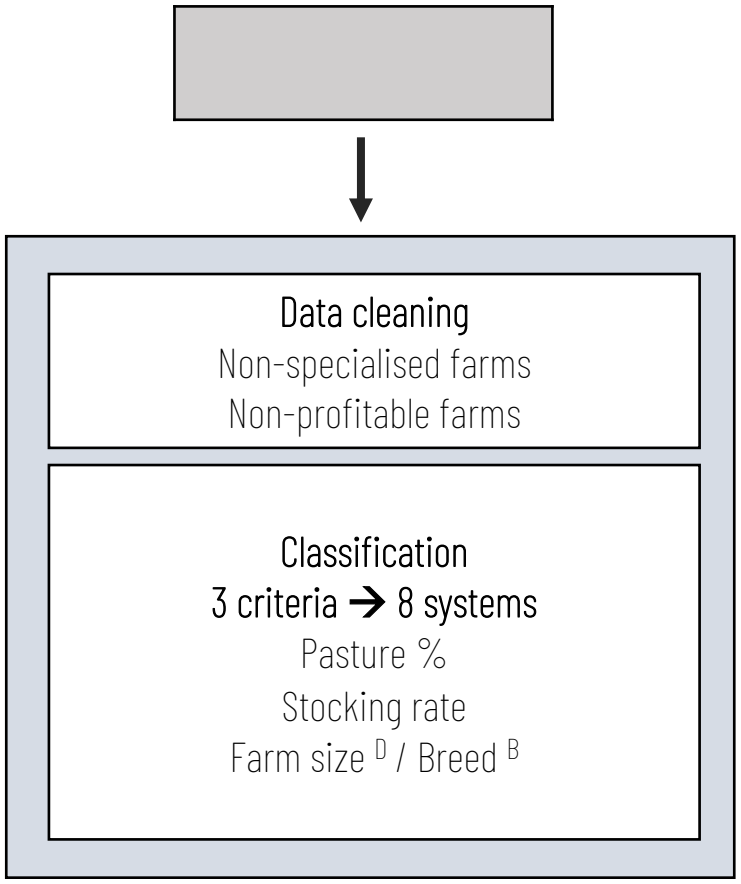
FADN data
4 years (2014 – 2017)

Note: Data provided by *Direction d'Analyse Economique Agricole* (DAEA/FADN).

A two-step methodology

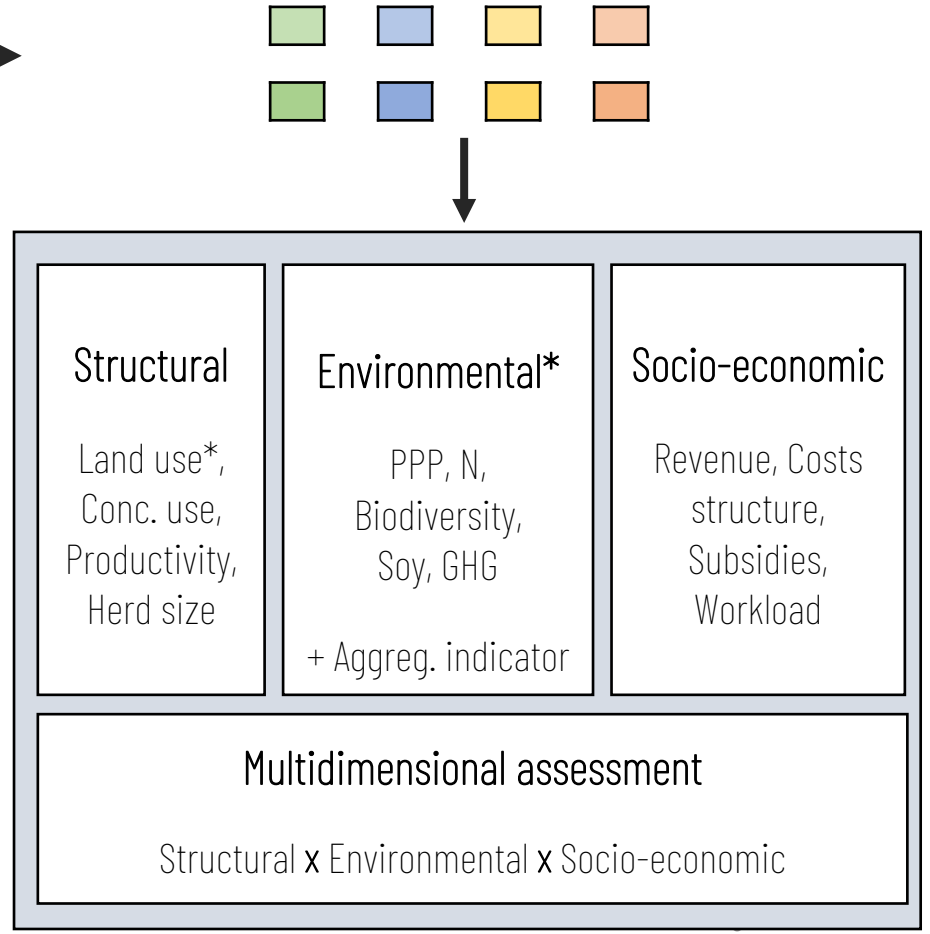
I. DIVERSITY ASSESSMENT

Initial sample - Unclassified



II. SUSTAINABILITY ASSESSMENT

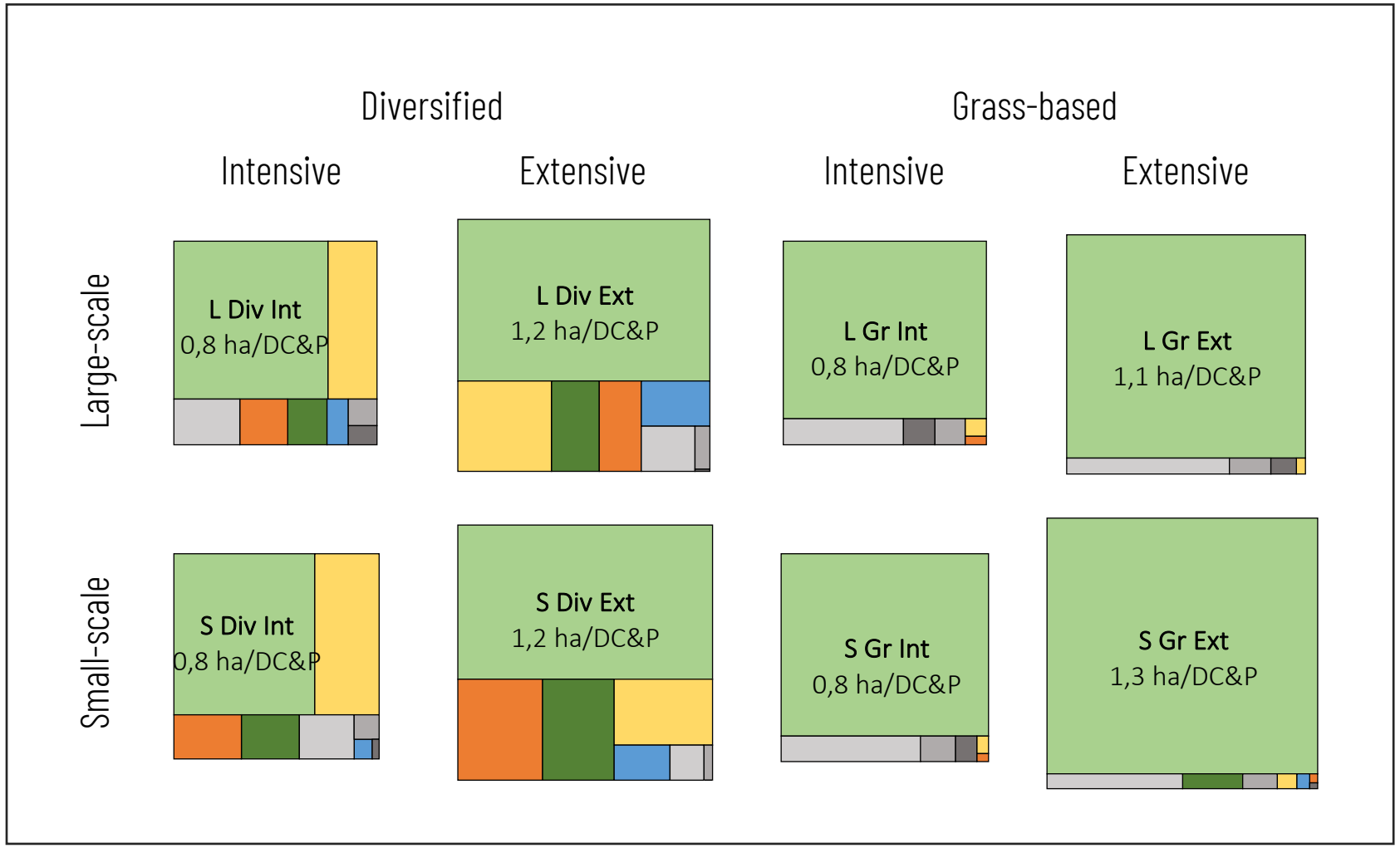
Final sample - Classified



* Estimated indicators, not included in core dataset.

A diversity of systems coexist

Dairy systems

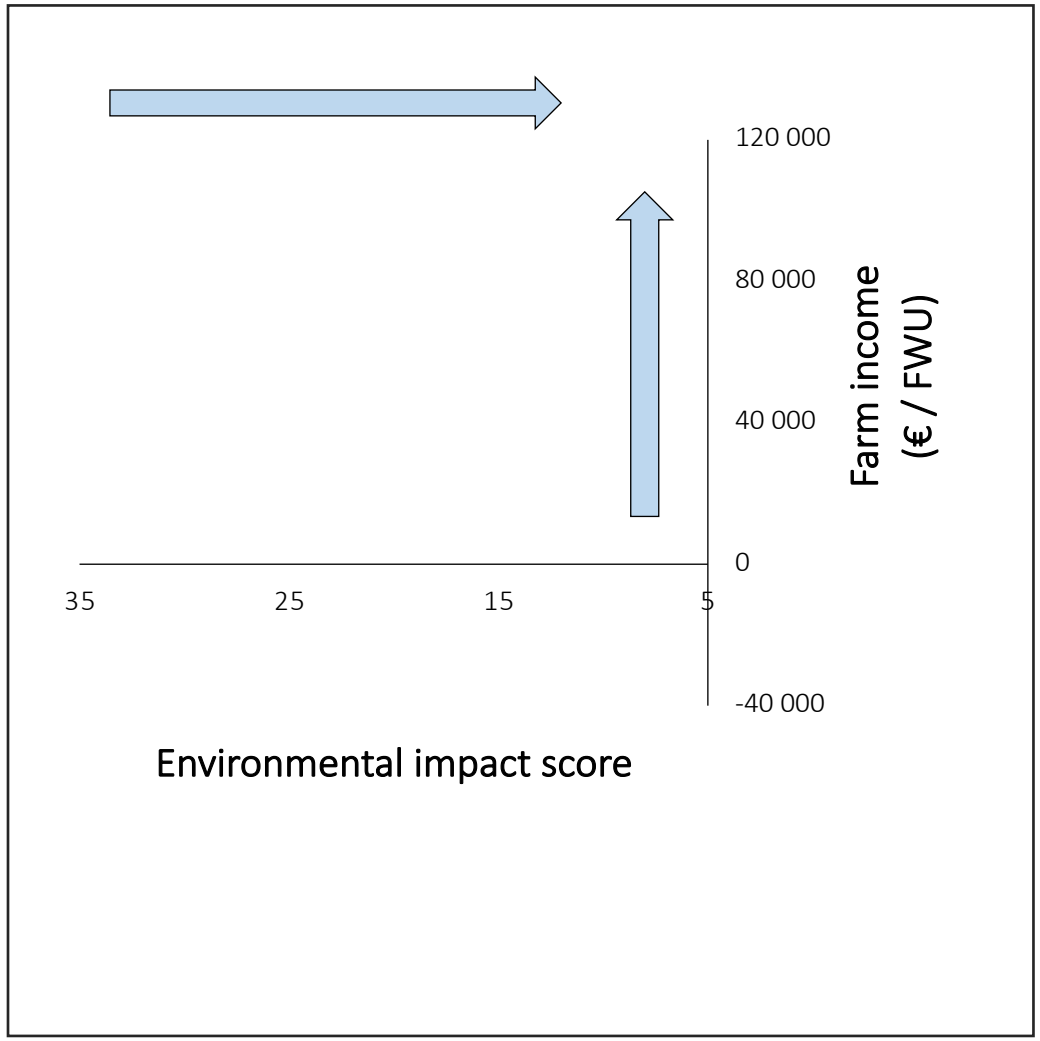


- Permanent pasture
- Temporary pasture
- Forage maize
- Other forage crops
- Concentrates crops
- Cereals - bought
- Proteaginous seeds - bought
- Forage maize - bought

Note:
The size of the squares is relative to the average area use of each system (expressed in hectares per cow and progeny).

DC&P : Dairy Cow & Progeny
SC&P : Suckler Cow & Progeny

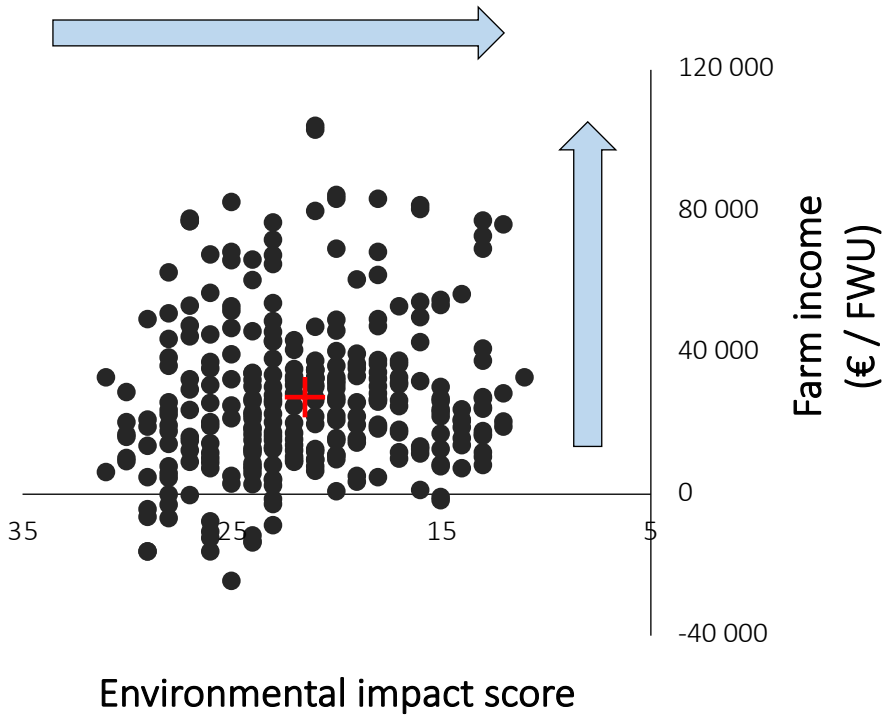
Two indicators to assess multidimensional sustainability



Diversity is key to grasp sustainability challenges

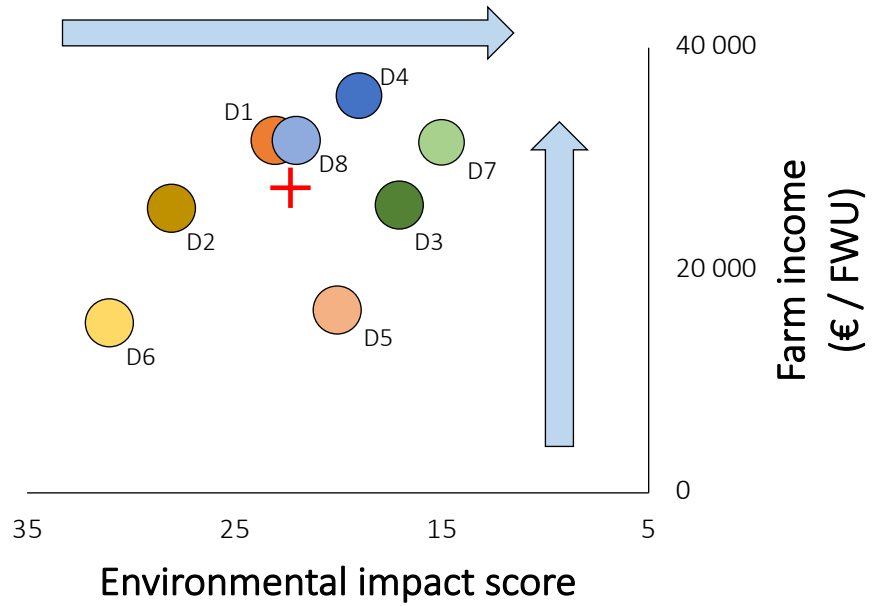
Dairy systems

Farm observations

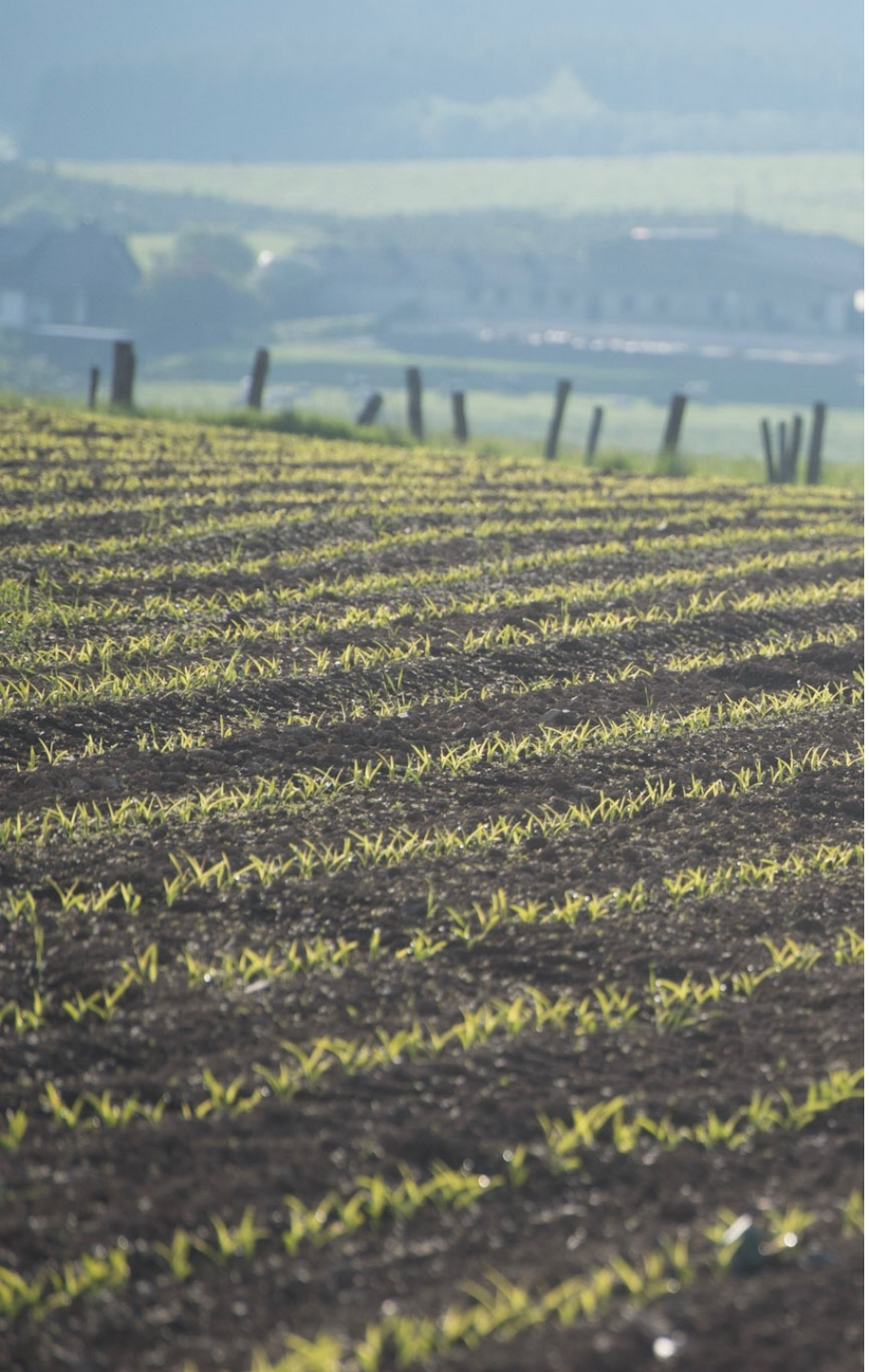


The red cross indicates sample averages.

Systems



- Large Diversified Ext (D1)
- Large Diversified Int (D2)
- Large Grass-based Ext (D3)
- Large Grass-based Int (D4)
- Small Diversified Ext (D5)
- Small Diversified Int (D6)
- Small Grass-based Ext (D7)
- Small Grass-based Int (D8)



Conclusions

- A diversity of systems coexist, which is reflected at several levels : Structural - Environmental – Economic

- Diversity is key to better grasp sustainability challenges.

- Overcoming trade-offs between economic and environmental performances is possible.
  → Extensive grass-based systems present the best combined performances.

- Economic performances remain poor.
  → In-depth economic analysis by Duluins et al. (paper & presentation)

- Possible next steps : Integrate in prospective scenario design to assess possible transition pathways.

Thank you for your attention !

SYTRA

transition of
food systems

WWW.SYTRA.BE

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Link to study results