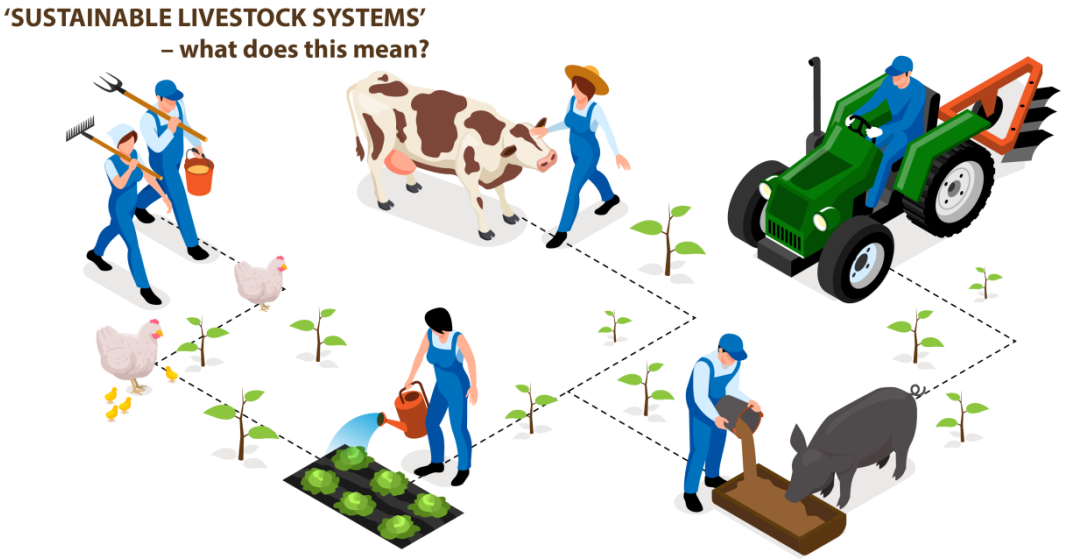
atf animal task force
A European Public-Private Partnership

EAAP European Federation of Animal Science

3rd one-day symposium
of the Animal Task Force & the EAAP Commission on Livestock Farming Systems:
Sustainable livestock farming – defining metrics and rationalising trade-offs?



Methods to assess the sustainability of livestock systems: challenges and opportunities

Evelien de Olde

True Price Cappuccino

How sustainable do you drink your coffee?

What if we include all effects on people and nature?

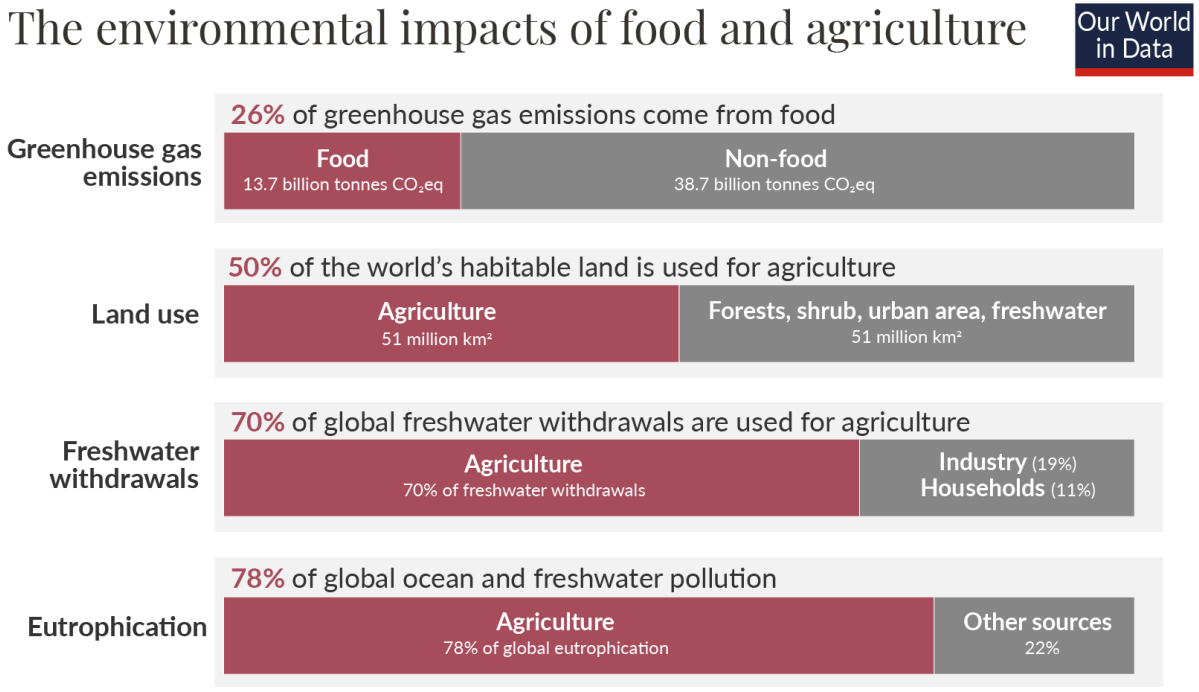
	Costs	True Price
▪ Cappuccino with cow milk	€ 2.00	€ 2.28
▪ Cappuccino with oat milk	€ 2.00	€ 2.11

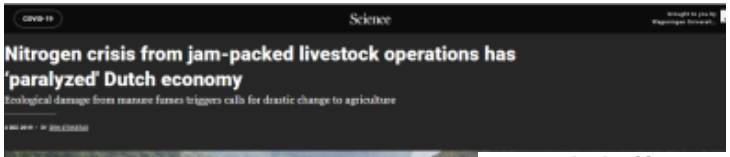
Content

- Sustainability challenges in livestock farming
- Measuring sustainability of livestock systems
    - Current application
    - Assessment methods
- Challenges and ways forward

WAGENINGEN
UNIVERSITY & RESEARCH

Sustainability challenges in livestock farming





Hundreds of farmers rally in Madrid to demand fairer prices

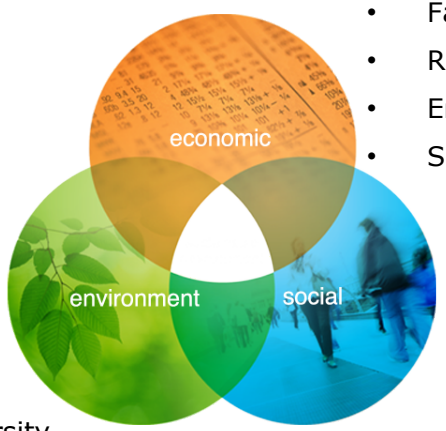
Protesters are calling on the Spanish government to take action to address the crisis, which they say is threatening the future of the agriculture sector

French farmers protest against low earnings, deplore high suicide rate

PARIS (Reuters) - French farmers hu
from nooses in trees in Paris on Thu
say is suffocating the agricultural ind
week been in talks with retail giants

Reuters | Last Updated:March 05, 2021

- GHG
- Water
- Air
- Land
- Biodiversity
- Energy



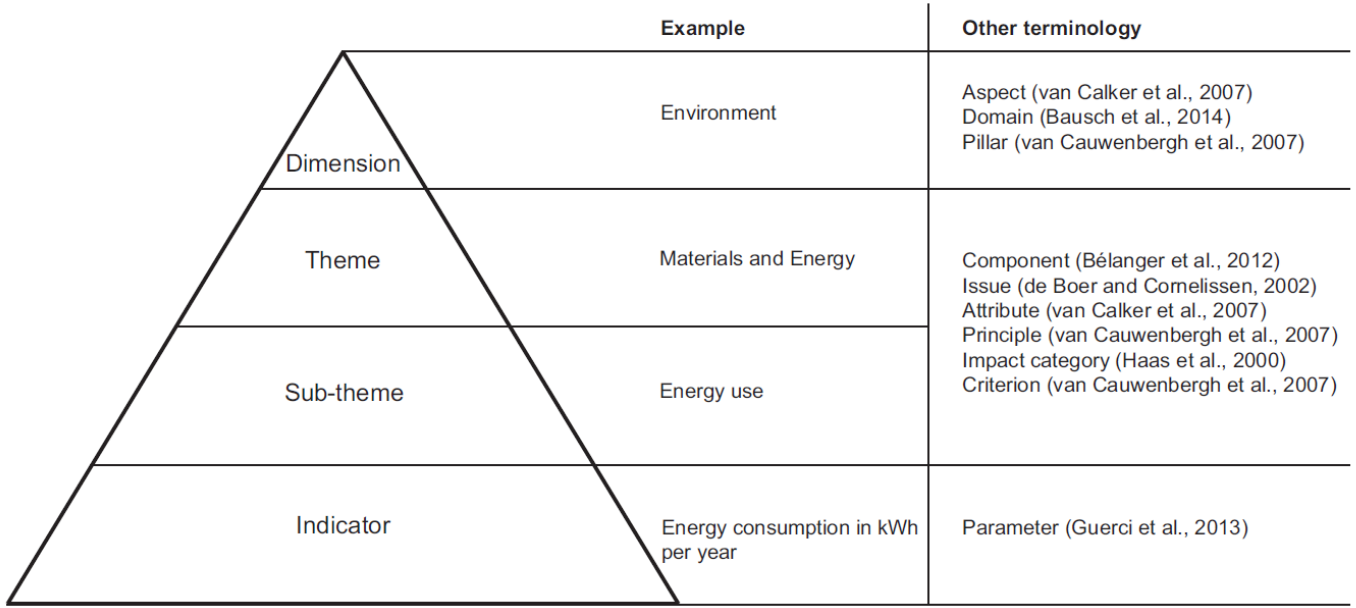
- Farm income
- Rural livelihood
- Employment
- Succession

- Labour conditions
- Quality of life
- Animal welfare
- Public health
- Landscape quality

WAGENINGEN
UNIVERSITY & RESEARCH

Measuring sustainability of livestock systems

... from challenges, to assessment, towards sustainable development



(de Olde et al., 2016)

Measuring sustainability of livestock systems

Current application

Market

Business

Policy

Farmers

Market – example Better Life label

- NGO-led – Dutch Society for the Protection of Animals
- 208 criteria (including recommended)
- From animal welfare focused to broader sustainability
- Voluntary

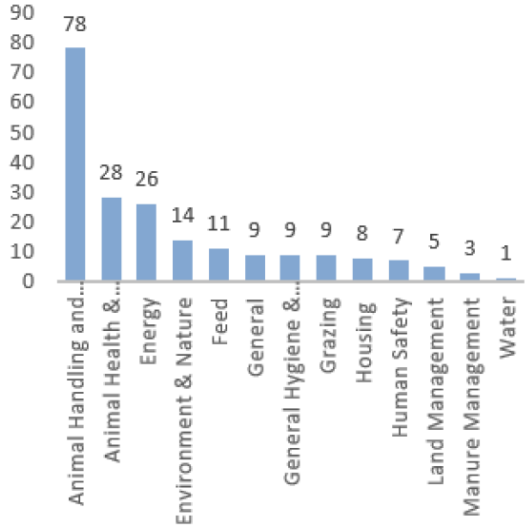


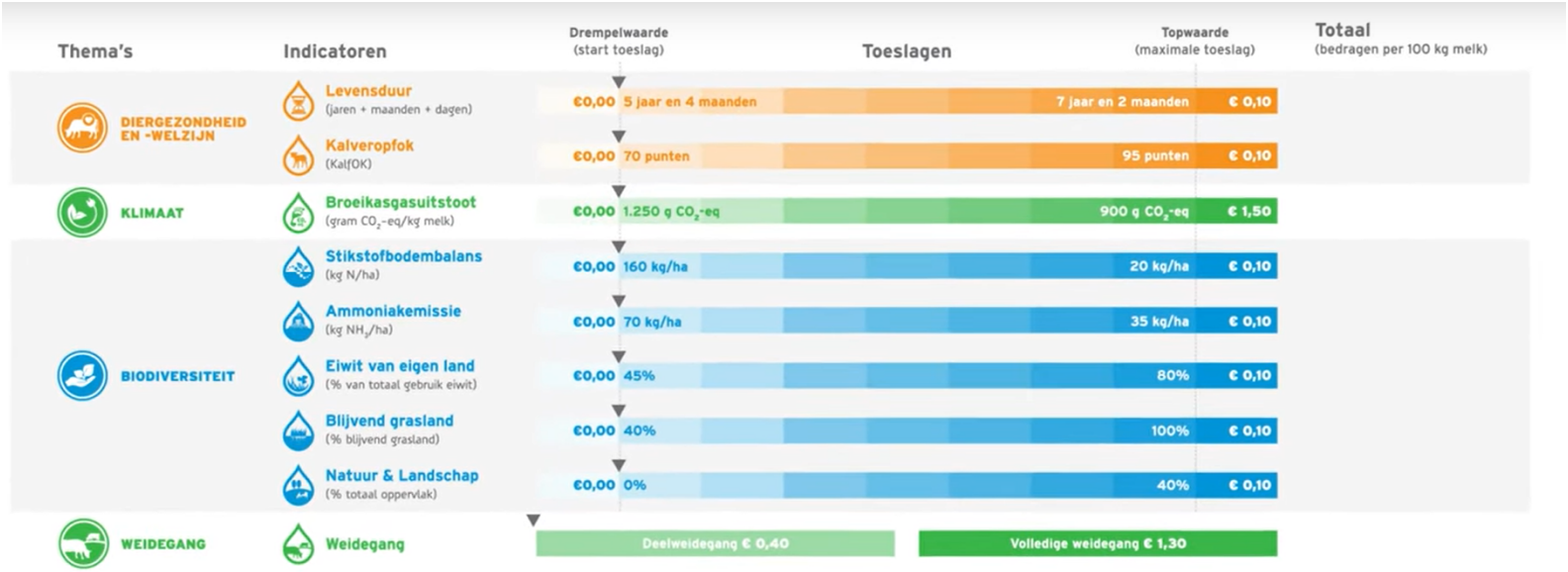
Figure 3.2. Distribution themes Better Life.

Market – sustainability certification

- Recent studies in crop, dairy and poultry
- Widely used -> influence
- Livestock hardly studied
- Highly variable
    - Themes and indicators (type and number)
    - Scoring and weighting systems (recommended vs required)
    - Level of ambition (beyond legal / quality control)
    - Organisation (retailer, NGO, industry)
- Practice-based indicators

Business – example FrieslandCampina

Foqus Planet – Sustainable Development (proposal Oct. 2022)



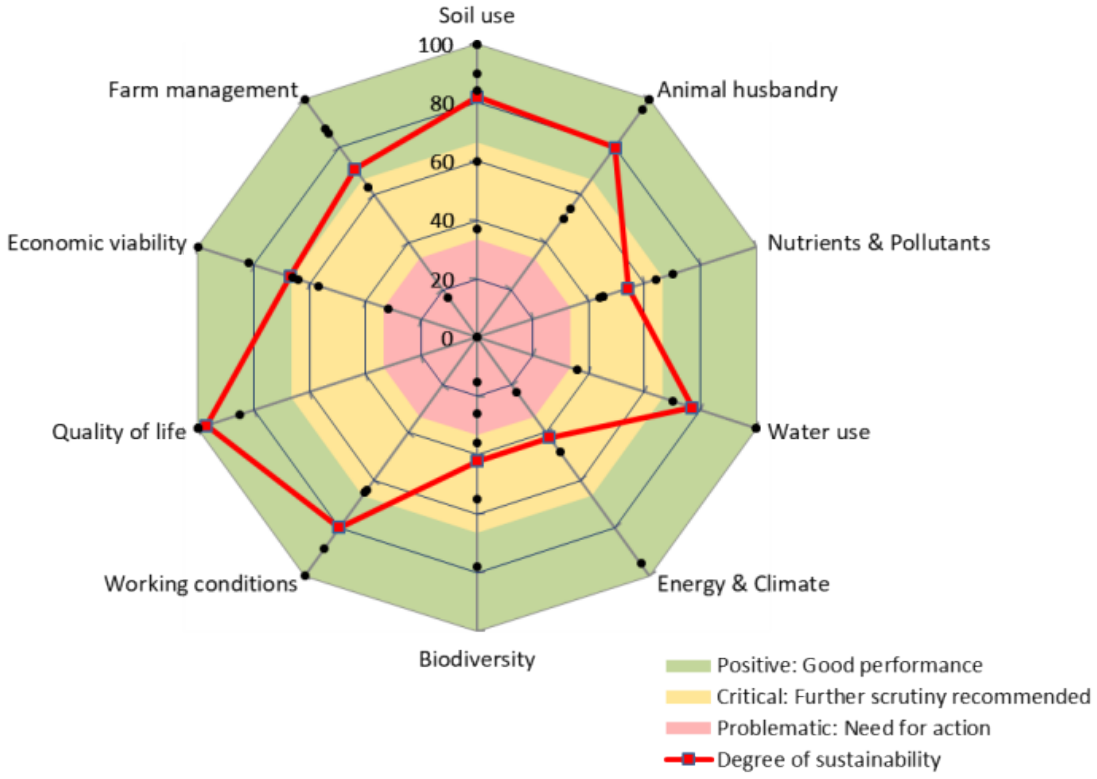
(FrieslandCampina, 2022)

Policy – example Province of Drenthe

- Reward for performance on 5 themes
- Max € 2500 per year

Theme	Indicator	Reference value
Phosphate	P_2O_5 surplus per ha	< 0 P_2O_5/ha
Nitrogen	N surplus per ha	< 125 kg N/ha Reduction > 25 kg/ha (of previous year)
Ammonia	NH_3 per ha	< 50 kg NH_3 Reduction > 5 kg/ha (of previous year)
Climate	CO_2 eq / kg milk	< 1350 g CO_2 eq / kg milk Reduction > 100 g CO_2 eq / kg milk
Grazing	Days grazing	> 120 days, 720 h

Farmers – example RISE 2.0




Setting
- Goal
- Purpose
- Users
- Context
Purpose
- Farm advice
- Certification
- Research
- Policy
Assessment type
- ex-ante
- ex-post
Assessment level
- Product
- Field
- Farm
- Regional
- National
Type of indicator
- Target
- Practice
- Performance
Data collection
- Farm survey
- Sampling
- Stats
- Satellite
Sustainability assessment

Types of sustainability assessment

1. **Ex-ante assessment of sustainability**

   E.g. optimization models, bioeconomic models, data from farm surveys or databases, for research or policy advice

2. **Ex-post assessment of sustainability**

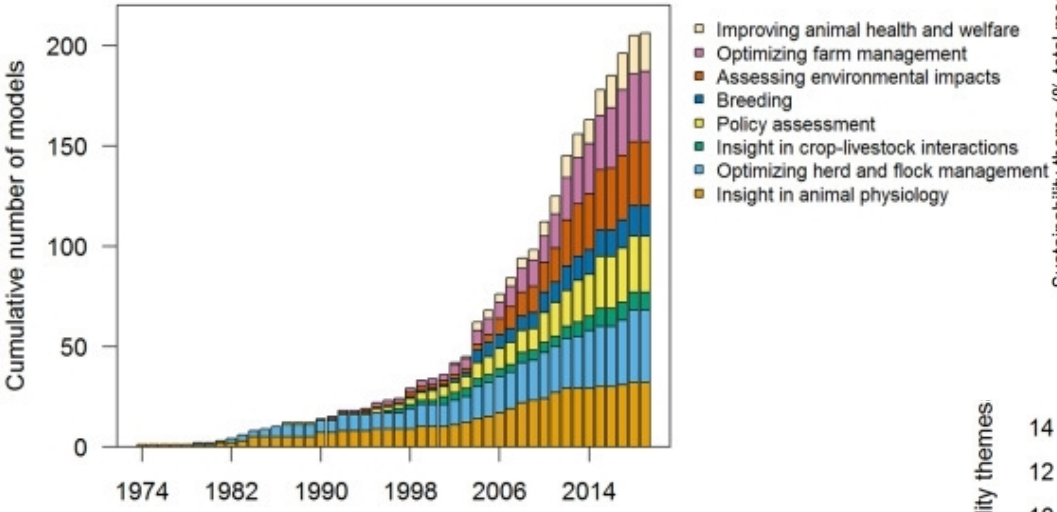
   E.g. farm assessment tools, indicator sets, data from farm interview (quantitative and qualitative), for farm advice or research, different levels of stakeholder involvement

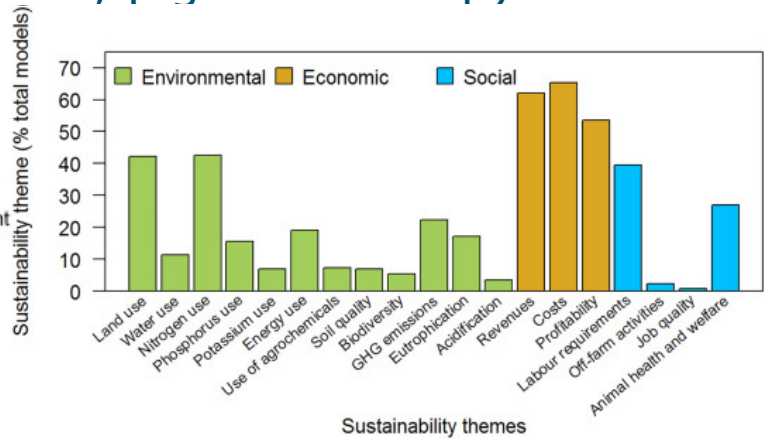
3. **Life cycle assessment**

   E.g. environmental impact (GWP, eutrophication, acidification, land, water and energy use) per kg product or protein

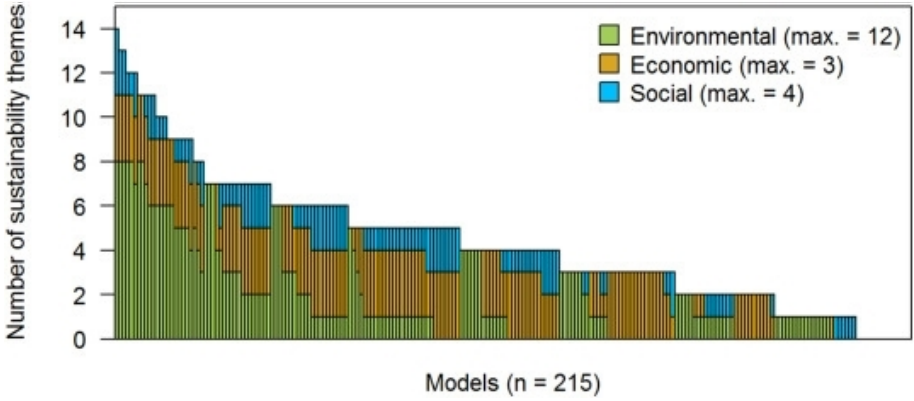
1. Ex-ante assessment of sustainability

- 215 European models (mainly dairy, beef, pigs and sheep)





(Van der Linden et al., *2020*. A review of European models to assess the sustainability performance of livestock production systems...)



WAGENINGEN
UNIVERSITY & RESEARCH

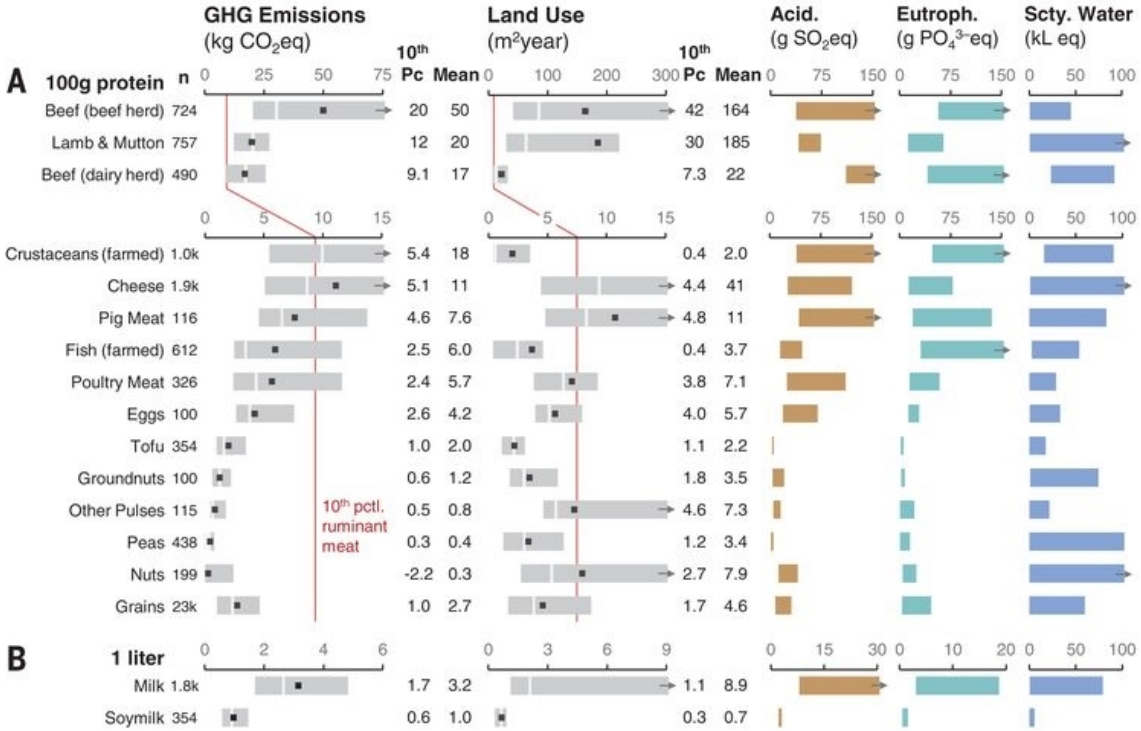
2. Ex-post assessment of sustainability

- 48 indicator-based tools
  - A continuous proliferation of tools...
  - Limited attention to implementation
- In-depth comparison of four tools (SAFA, RISE, PG, IDEA)
  - Large number of indicators (116 – 185)
  - Context specificity -> relevance
  - Different indicators, even for similar themes
  - Weights and aggregation

(De Olde et al., 2016. Assessing sustainability at farm-level: Lessons learned from a comparison of tools in practice)

3. Life Cycle Assessment

- Review of 570 studies ~38,000 farms of 40 products



(Poore & Nemecek, 2018. Reducing food's environmental impacts through producers and consumers)

WAGENINGEN
UNIVERSITY & RESEARCH

3b. True Cost Accounting (TCA)

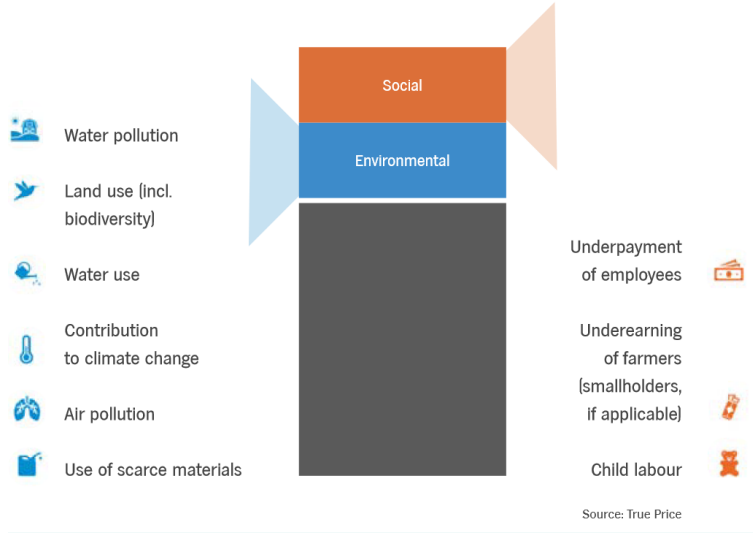
- Accounting for social and environmental (negative and/or positive) externalities

- COP 26 and UN Food Systems Summit
  - *"a game changing solution for food system transformation"*

- > 35 initiatives and methods
  - Indicators, monetization and aggregation

3b. True Cost Accounting (TCA)

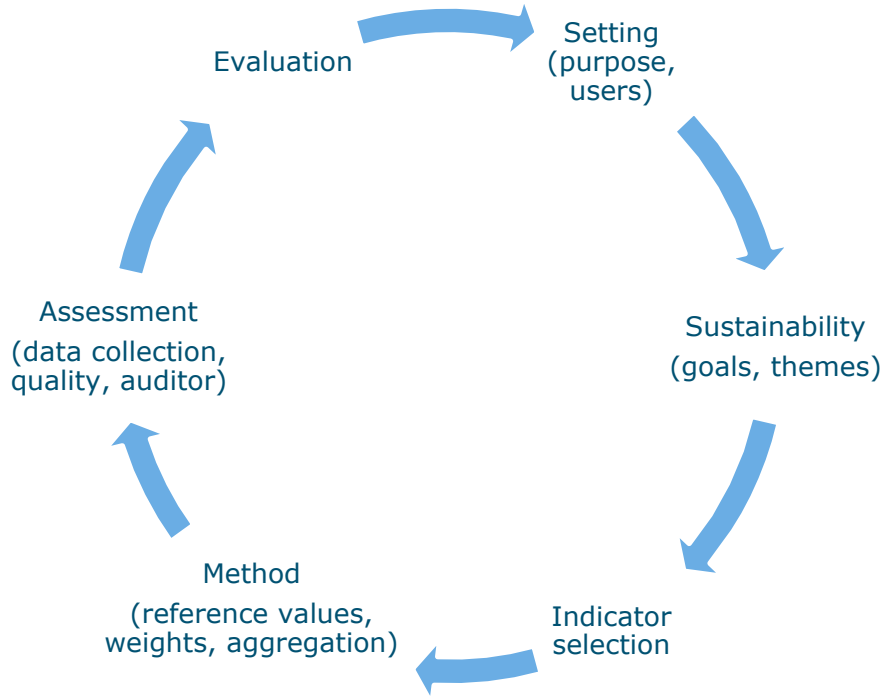
- True Price pilot AH
  - Environmental and social external costs
  - 15% paid TP
  - Donation to Rainforest Alliance



(AH, 2023)

Sustainability assessments

- Process of many decisions that all affect the outcome



Sustainability assessments - challenges

- Process of many decisions that all affect the outcome
- Continuous proliferation of models, tools and indicators
- Tendency to focus on aspects that are easy to quantify
- Divergence in public and private interest and sustainability goals
- Sustainability standards – wide reach but unknown impact
- Aggregation risks

Ways forward

- Sustainability as continuous improvement
- Recognize that sustainability assessments are value-based
- Harmonization of terminology, indicator sets and methods while allowing for context specificity
- Allow different indicators over time (practice and performance)
- Towards food system governance (aligning public and private)
- Embrace complexity

Thanks!

evelien.deolde@wur.nl

Thanks to colleagues at APS and WEcR

Special thanks to Eddie Bokkers, Imke de Boer, Aart van der Linden, Keeley McGarr-O'Brien, Tomke Smit

WAGENINGEN
UNIVERSITY & RESEARCH