

atf

animal
task
force

A European Public-Private Partnership



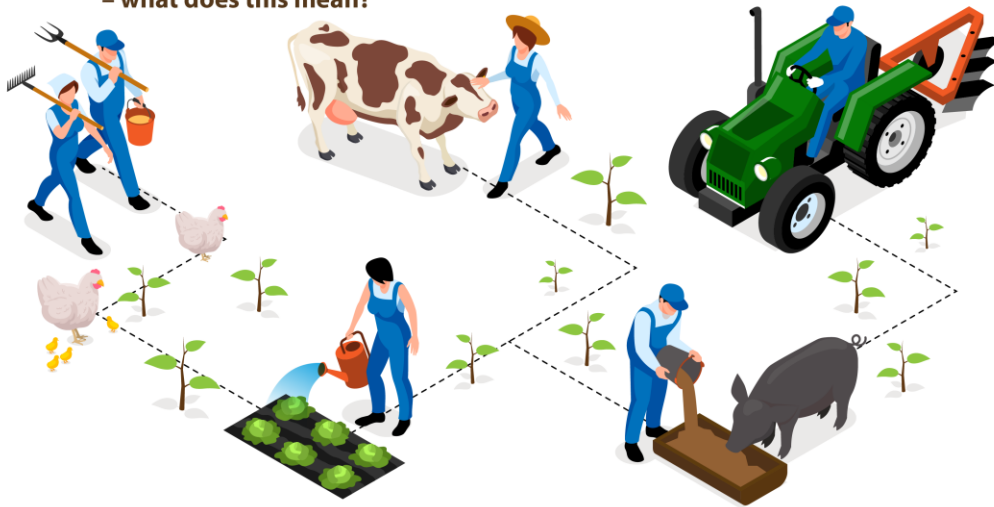
EAAP

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?*

'SUSTAINABLE LIVESTOCK SYSTEMS'
– what does this mean?



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

Evelien de Olde

True Price Cappuccino

How sustainable do you drink your coffee?

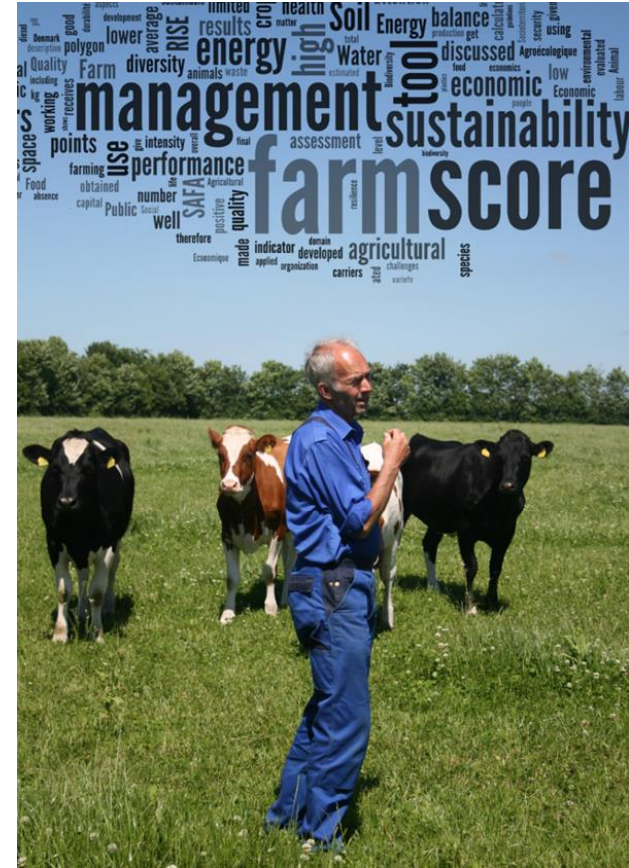
What if we include all effects on people and nature?



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

Content

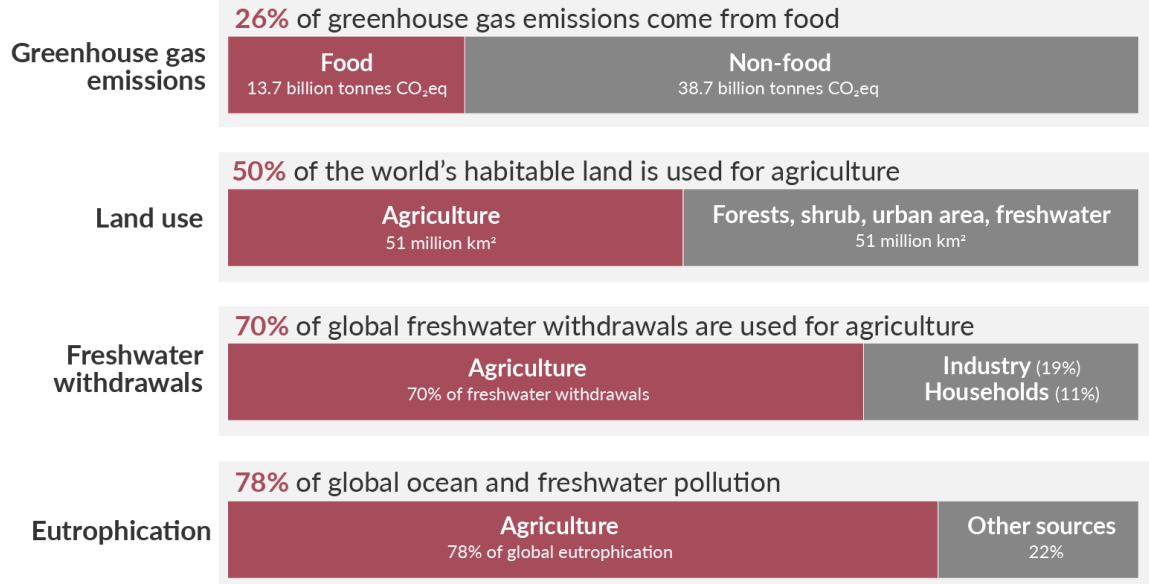
- Sustainability challenges in livestock farming
- Measuring sustainability of livestock systems
 - Current application
 - Assessment methods
- Challenges and ways forward



Sustainability challenges in livestock farming

The environmental impacts of food and agriculture

Our World
in Data



Science

Nitrogen crisis from jam-packed livestock operations has 'paralyzed' Dutch economy
 Ecological damage from manure fumes triggers calls for drastic change to agriculture



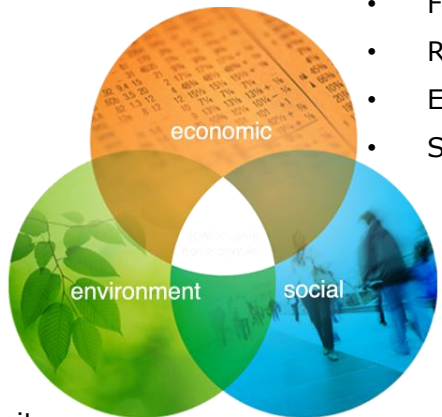
Hundreds of farmers rally in Madrid to demand fairer prices
 Protesters are calling on the Spanish government to take action to address the crisis, which they say is threatening the future of the agriculture sector



French farmers protest against low earnings, deplore high suicide rate

PARIS (Reuters) - French farmers hung from nooses in trees in Paris on Thursday say is suffocating the agricultural industry. Last week been in talks with retail giants

Reuters | Last Updated: March 05, 2021



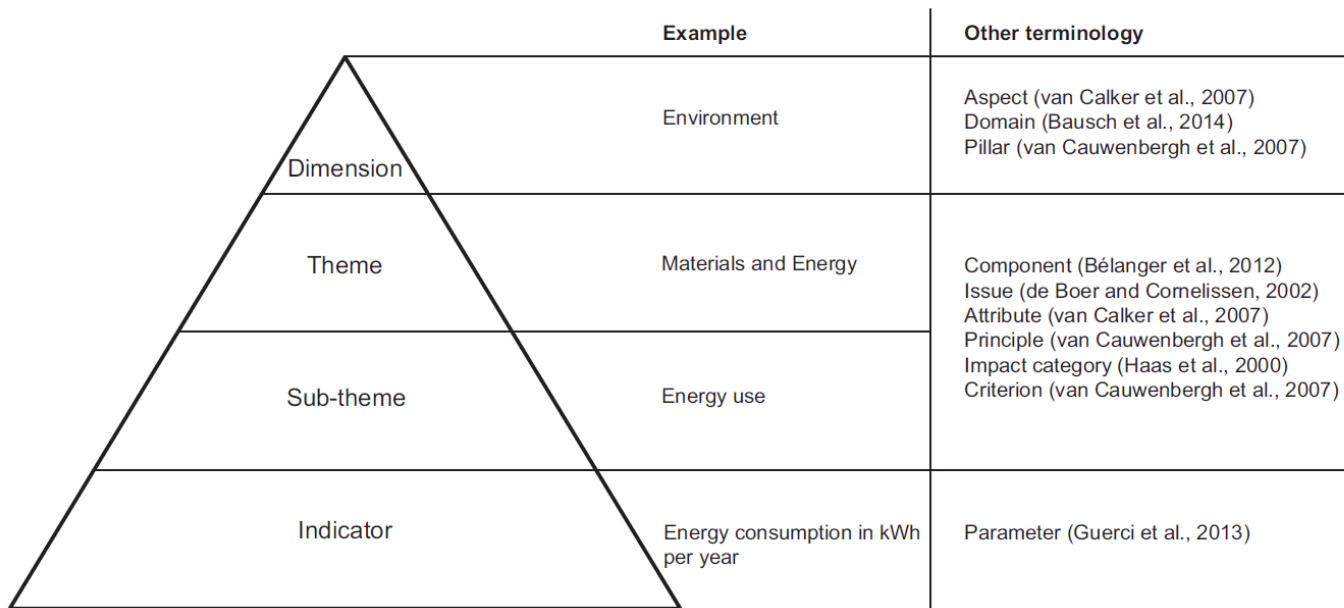
- GHG
- Water
- Air
- Land
- Biodiversity
- Energy

- Farm income
- Rural livelihood
- Employment
- Succession

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

Measuring sustainability of livestock systems

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



	Example	Other terminology
Dimension	Environment	Aspect (van Calster et al., 2007) Domain (Bausch et al., 2014) Pillar (van Cauwenbergh et al., 2007)
Theme	Materials and Energy	Component (Bélanger et al., 2012) Issue (de Boer and Cornelissen, 2002) Attribute (van Calster et al., 2007)
Sub-theme	Energy use	Principle (van Cauwenbergh et al., 2007) Impact category (Haas et al., 2000) Criterion (van Cauwenbergh et al., 2007)
Indicator	Energy consumption in kWh per year	Parameter (Guerci et al., 2013)

(de Olde et al., 2016)

Measuring sustainability of livestock systems

Current application



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

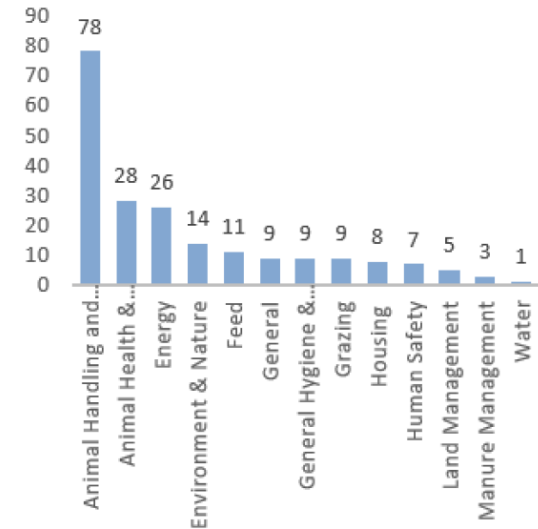


Figure 3.2. Distribution themes Better Life.

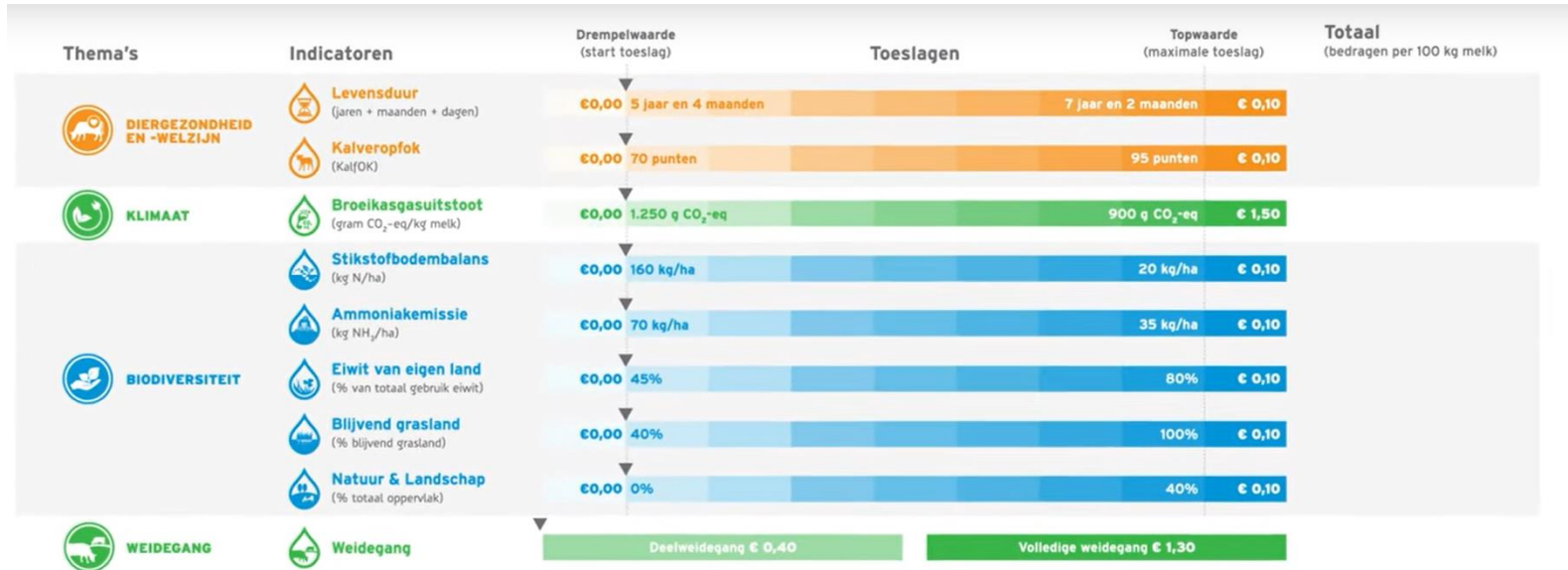
Market – sustainability certification

- 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)



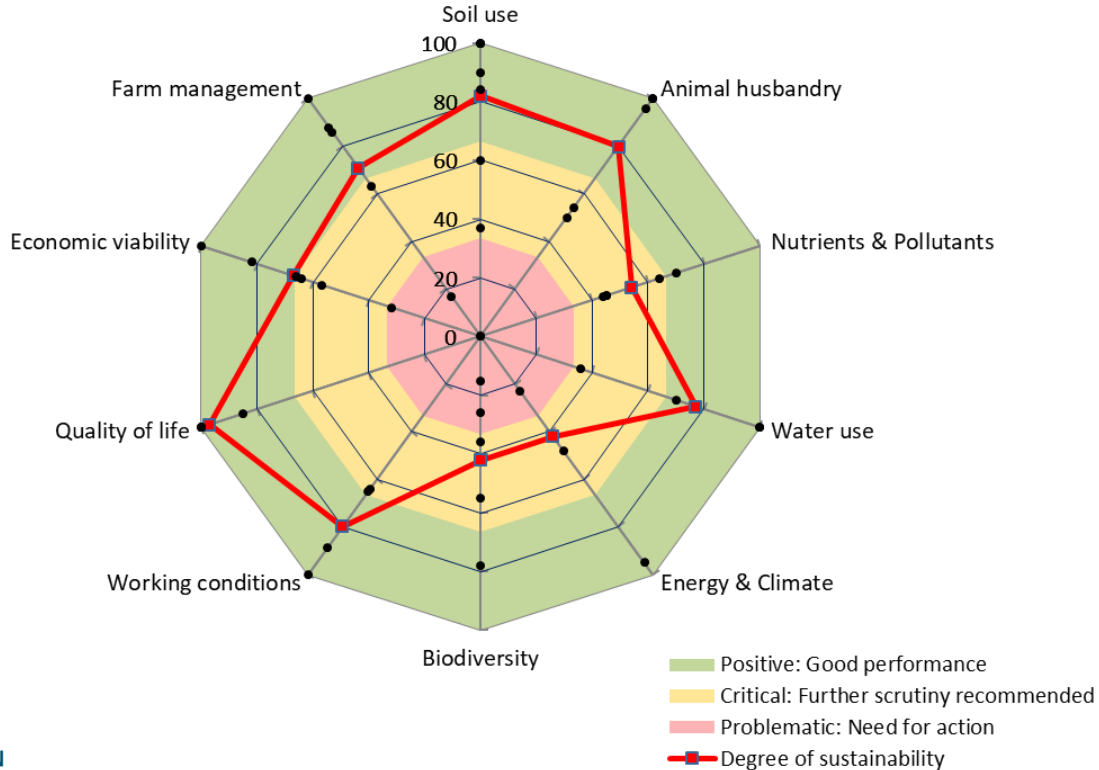
Policy – example Province of Drenthe

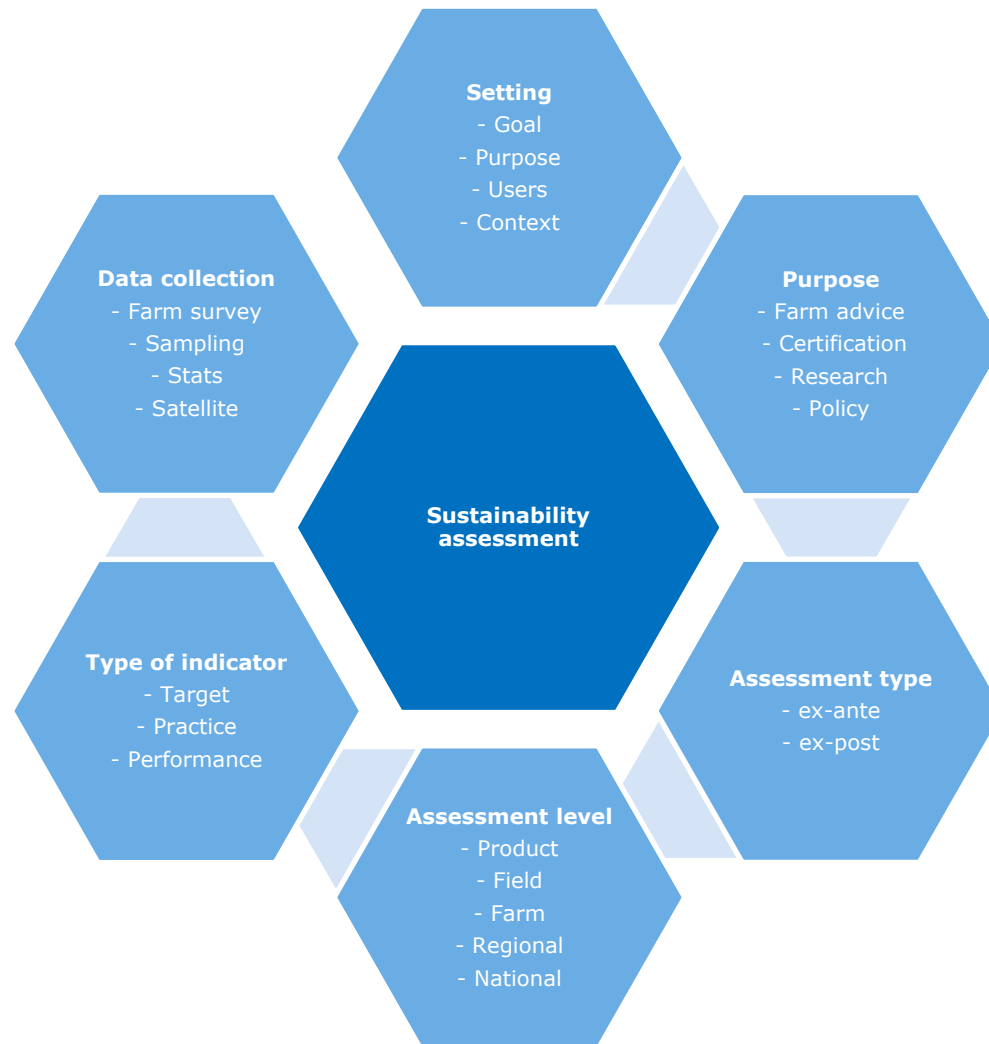
- Reward for performance on 5 themes
- Max € 2500 per year



Theme	Indicator	Reference value
Phosphate	P ₂ O ₅ surplus per ha	< 0 P ₂ O 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





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

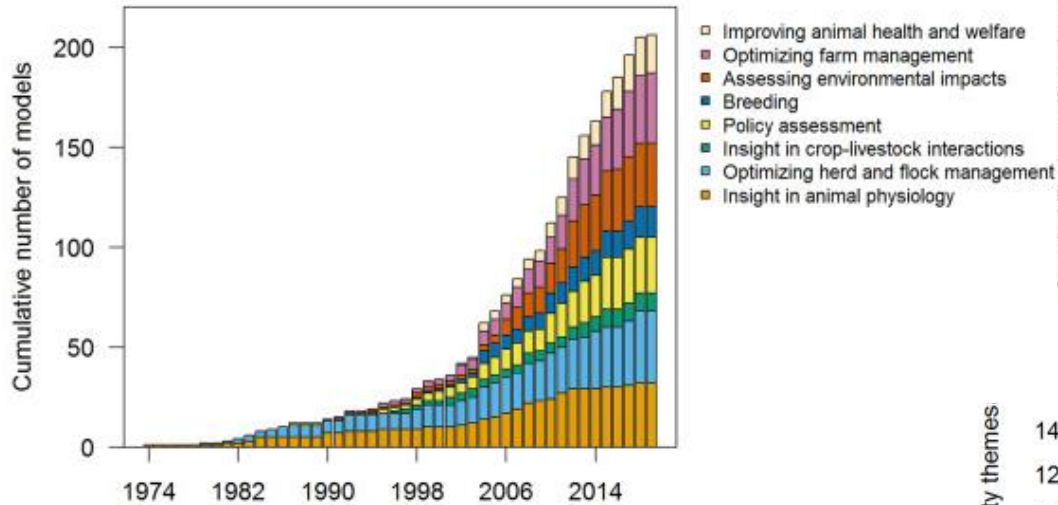
E.g. farm assessment tools, indicator sets, data from farm interview (quantitative and qualitative), for farm advice or research, different levels of stakeholder involvement

3. Life cycle assessment

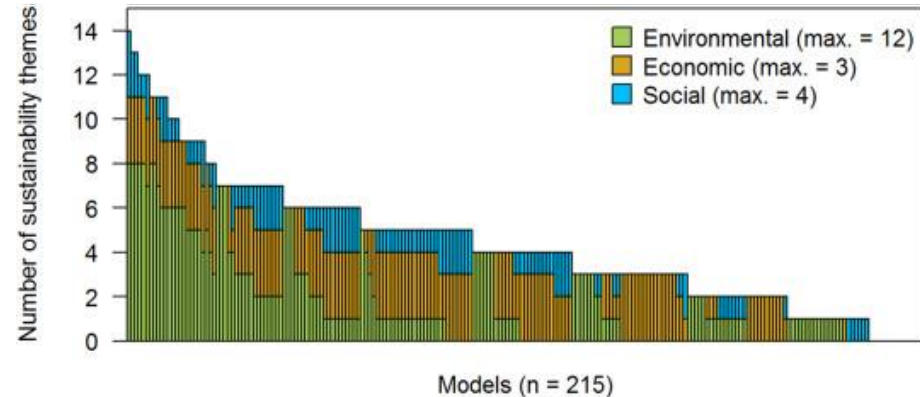
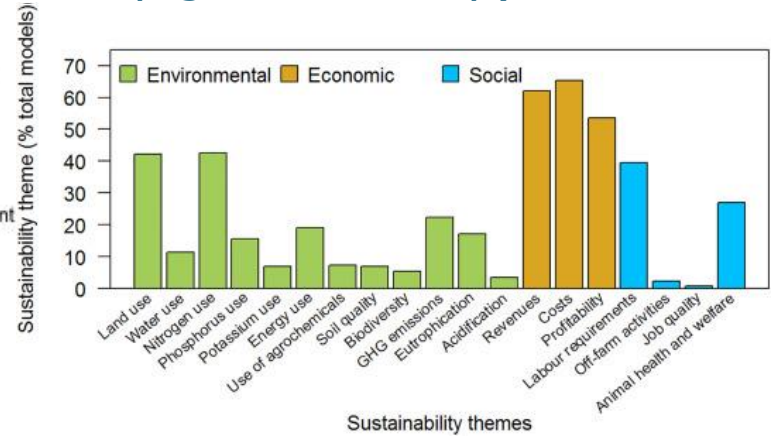
E.g. environmental impact (GWP, eutrophication, acidification, land, water and energy use) per kg product or protein

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...)



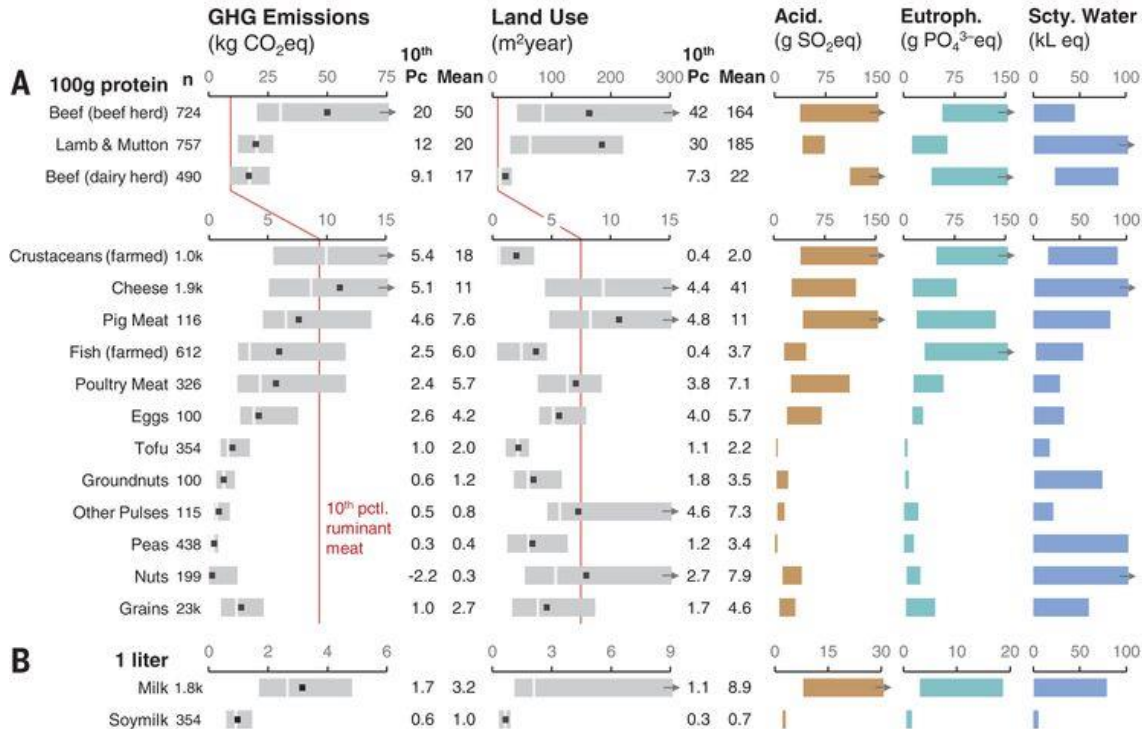
2. Ex-post assessment of sustainability

- 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)



**ZERO NET
EMISSIONS
BY 2050**

*Nestlé is accelerating
its actions*



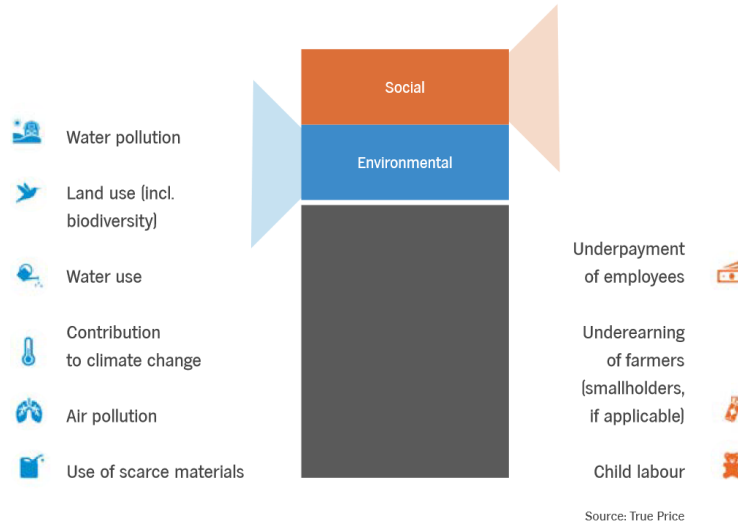
3b. True Cost Accounting (TCA)

- 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)

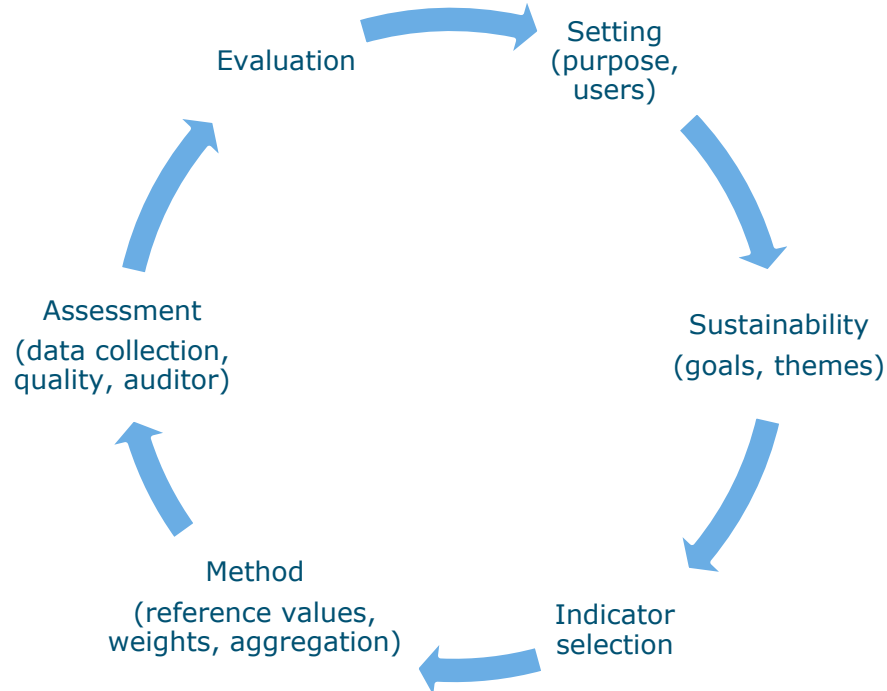
■ True Price pilot AH

- Environmental and social external costs
- 15% paid TP
- Donation to Rainforest Alliance



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!

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