Recent approaches for assessing sustainability at different levels

FOODPRINT

Ernesto Reyes

agri benchmark Beef and Sheep Network

Content

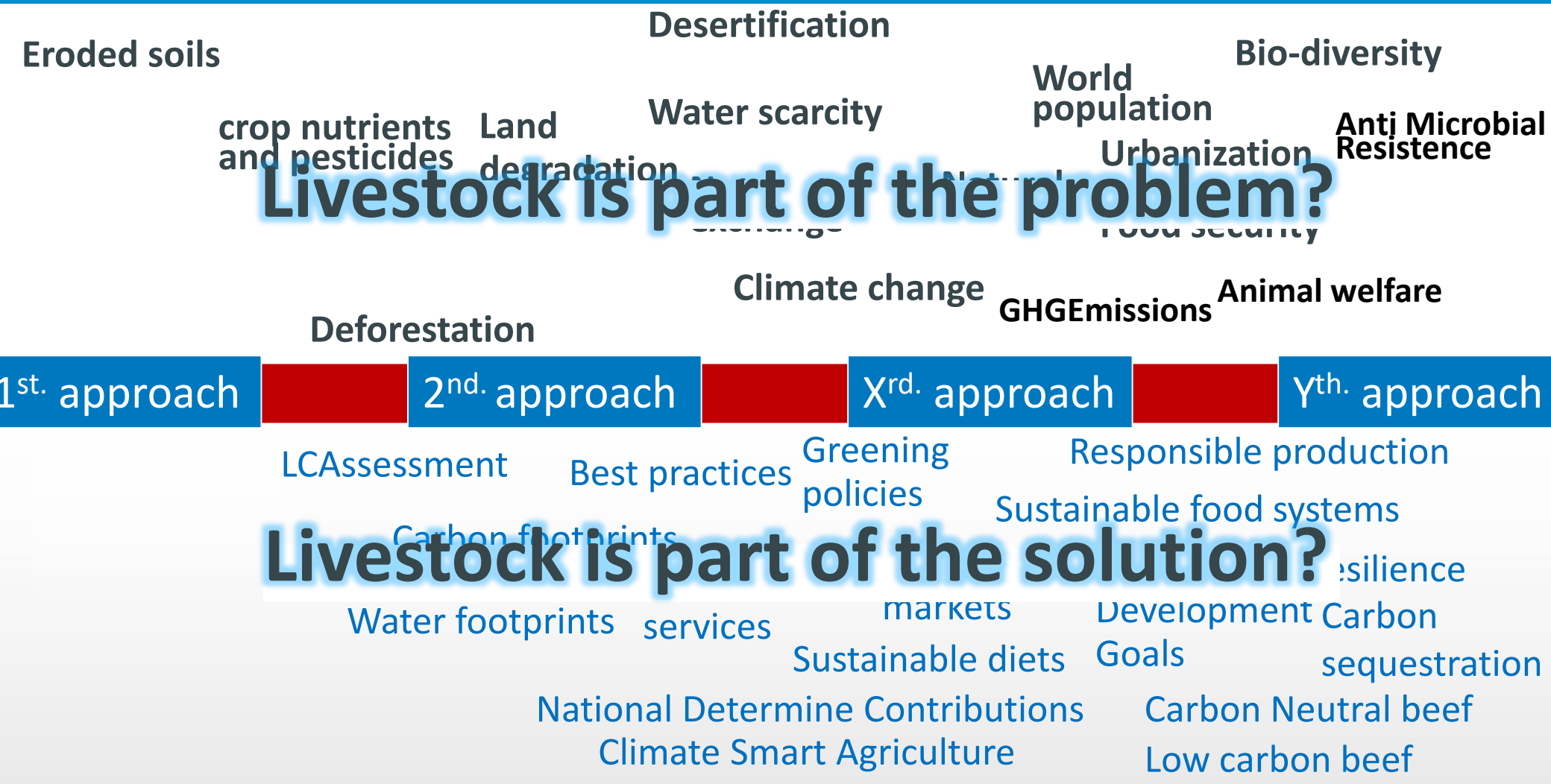
1. Defining sustainability
2. How to measure sustainability
3. Some final considerations

Content

1. Defining sustainability

Defining sustainability

Defining sustainability – it is an issue?



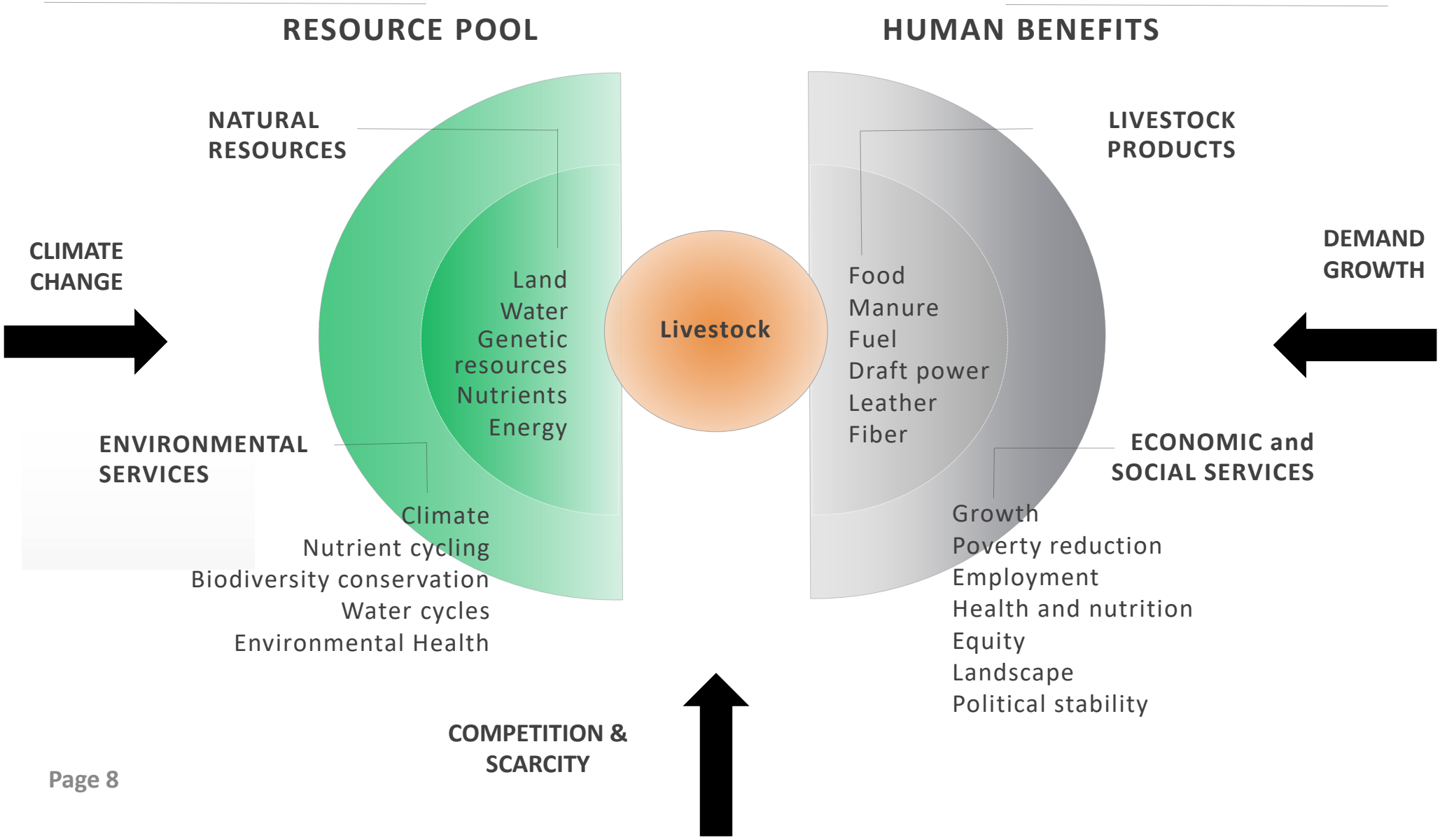
Defining sustainability

!!!!We have not reached yet!!!

Defining sustainability – who is dealing with it?

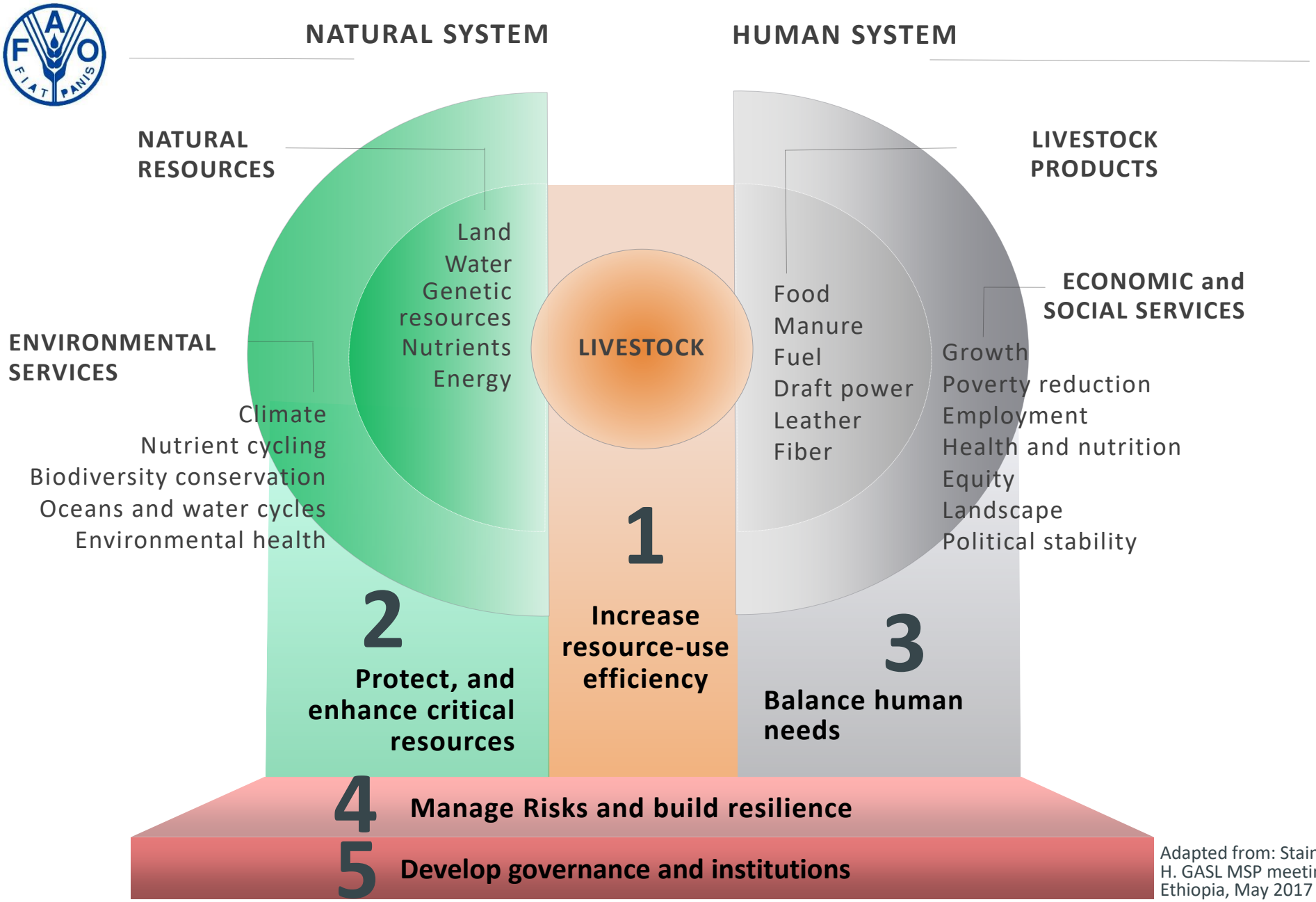
1st. approach | 2nd. approach | 3rd. approach | 4th. approach

Livestock and the interplay of bio-physical (nature) and socio-economic (human) dimension



Adapted from: Stainfeld, H. GASL MSP meeting, Ethiopia, May 2017

PRINCIPLES OF SUSTAINABLE FOOD AND AGRICULTURE



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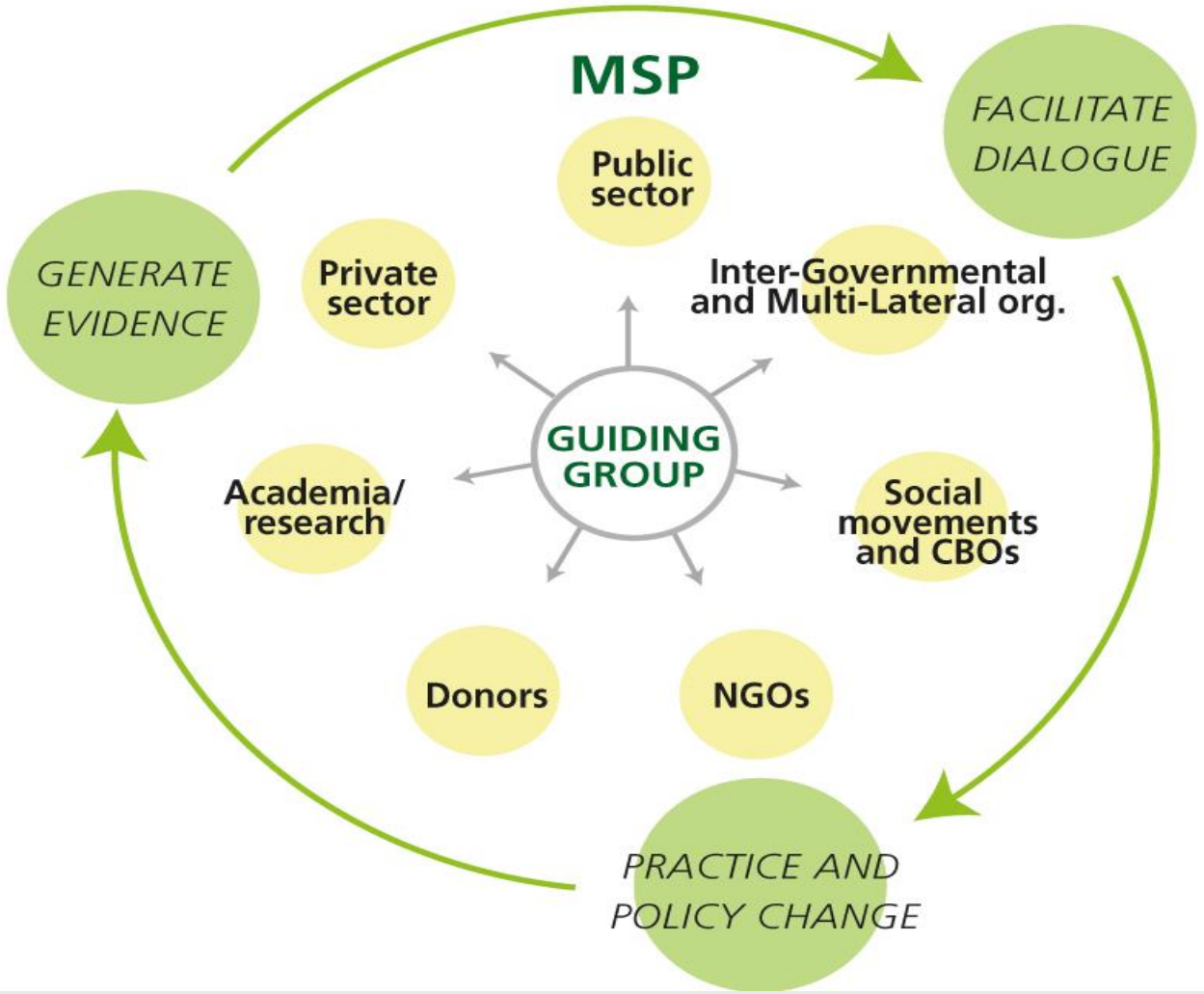
Defining sustainability – Who is leading the process?

Global Agenda for Sustainable Livestock



Defining sustainability – Who is leading the process?

Global Agenda for Sustainable Livestock

1st. approach	2nd. approach	3rd. approach	4th. approach
Closing the Efficiency Gap	Equity and growth	17 SDGs	Food and nutrition security
Value to grassland	Climate and resources		hoods and Economic Growth
Waste to worth	Health and nutrition		Health and animal
			Climate and natural resources use

COP 21

COP 24

Global Forum For Food and Agric.

Defining sustainability

Global Agenda for Sustainable Livestock

Sustainable Development Goals

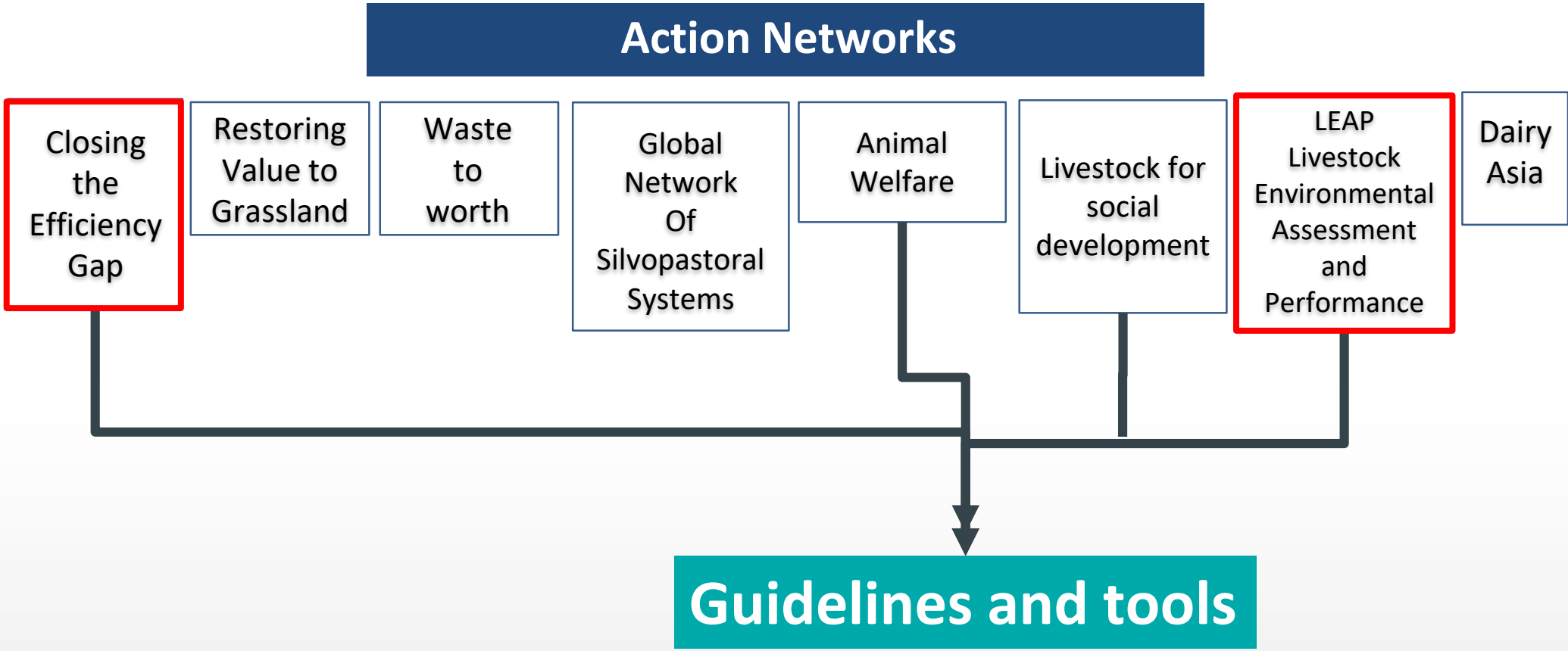
Content

1. Defining sustainability

2. How to measure sustainability

How to measure sustainability

Global Agenda for Sustainable Livestock



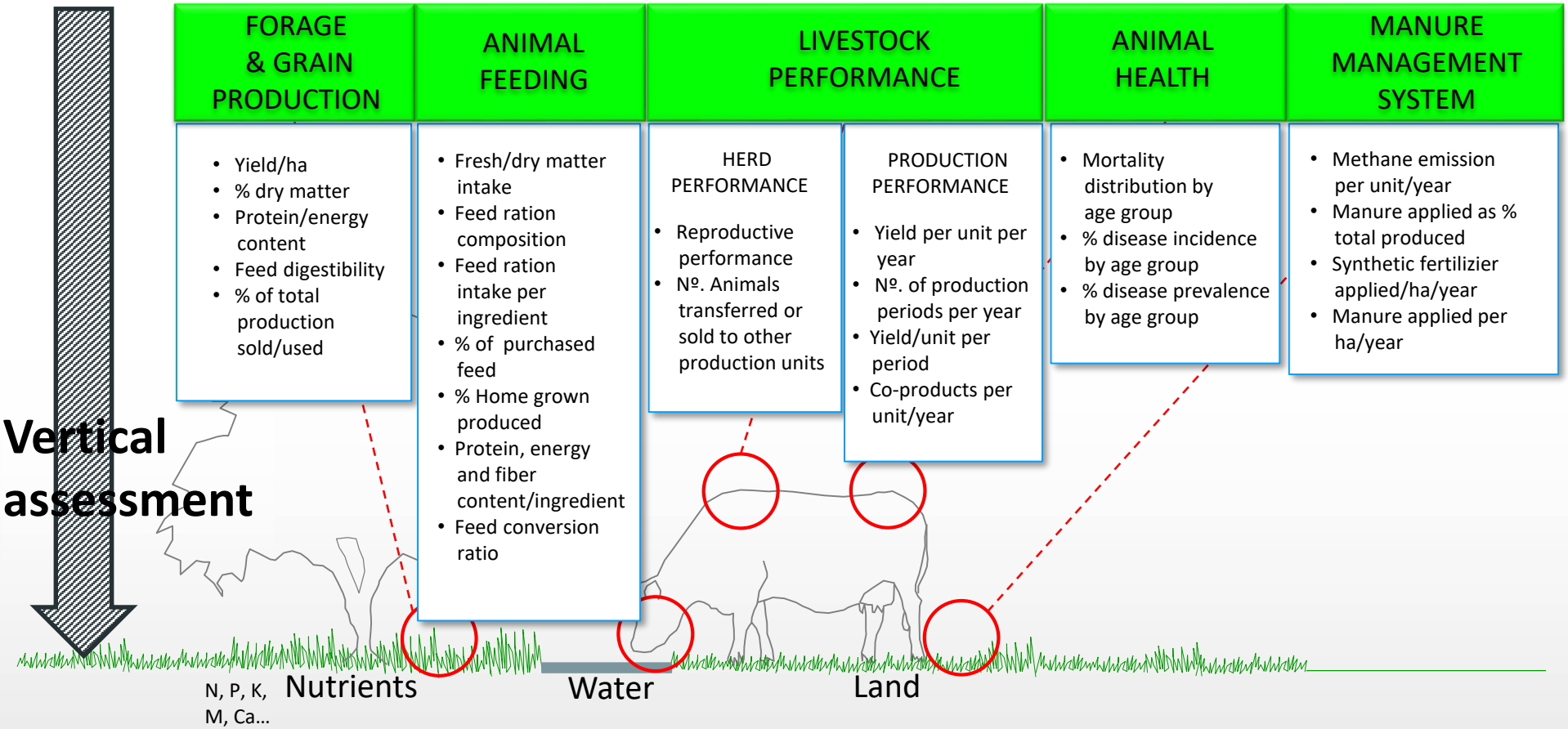
How to measure sustainability

Global Agenda for Sustainable Livestock

Natural Resource Use Efficiency - **Efficiency matrix**

FORAGE & GRAIN PRODUCTION	ANIMAL FEEDING	LIVESTOCK PERFORMANCE		ANIMAL HEALTH	MANURE MANAGEMENT SYSTEM
• Yield/ha • % dry matter • Protein/energy content • Feed digestibility • % of total production sold/used	• Fresh/dry matter intake • Feed ration composition • Feed ration intake per ingredient • % of purchased feed • % Home grown produced • Protein, energy and fiber content/ingredient • Feed conversion ratio	HERD PERFORMANCE • Reproductive performance • Nº. Animals transferred or sold to other production units	PRODUCTION PERFORMANCE • Yield per unit per year • Nº. of production periods per year • Yield/unit per period • Co-products per unit/year	• Mortality distribution by age group • % disease incidence by age group • % disease prevalence by age group	• Methane emission per unit/year • Manure applied as % total produced • Synthetic fertilizier applied/ha/year • Manure applied per ha/year

Vertical assessment



Economic → Animal Welfare → Environmental → Social Impact

Horizontal assessment

How to measure sustainability

Global Agenda for Sustainable Livestock

Food and Agriculture Organization of the United Nations

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leap | LIVESTOCK ENVIRONMENTAL ASSESSMENT AND PERFORMANCE PARTNERSHIP

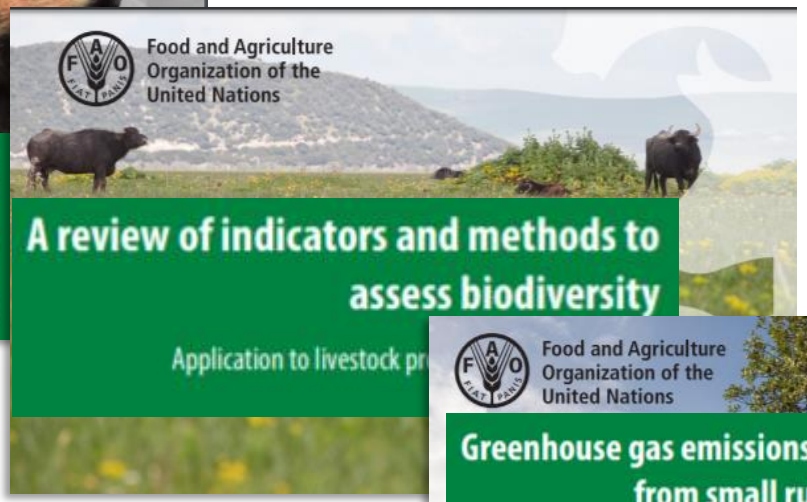
Overview | Partners | Activities | Publications | Database | News and Events

Launch of the public review of the LEAP guidelines for measuring and modelling soil carbon stocks and stock changes in livestock production systems

Soil carbon storage is a vital ecosystem service, resulting from...

How to measure sustainability

Global Agenda for Sustainable Livestock



How to measure sustainability – at which level?

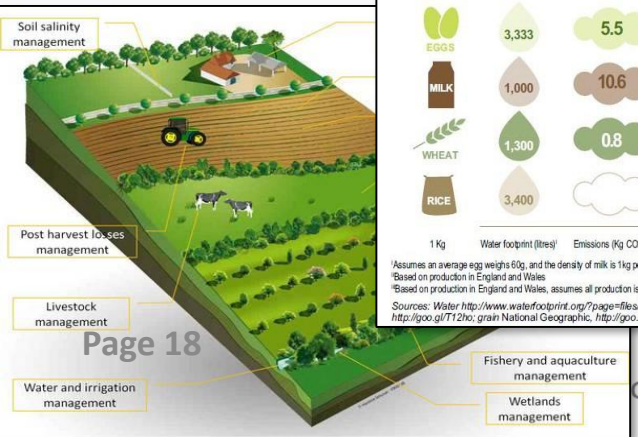
Regional level

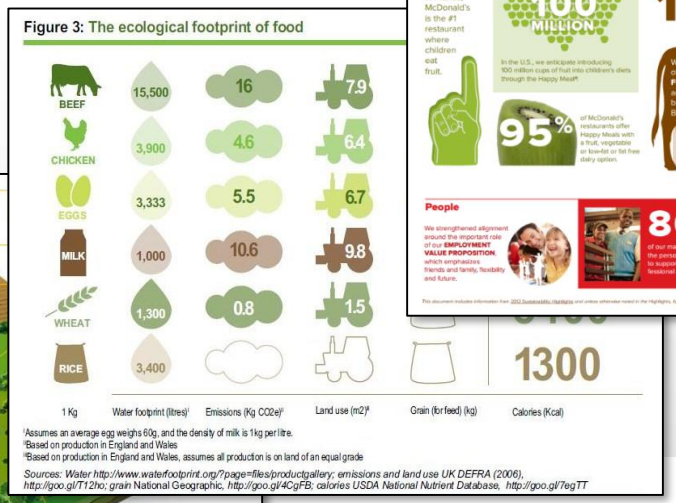
Value chain level

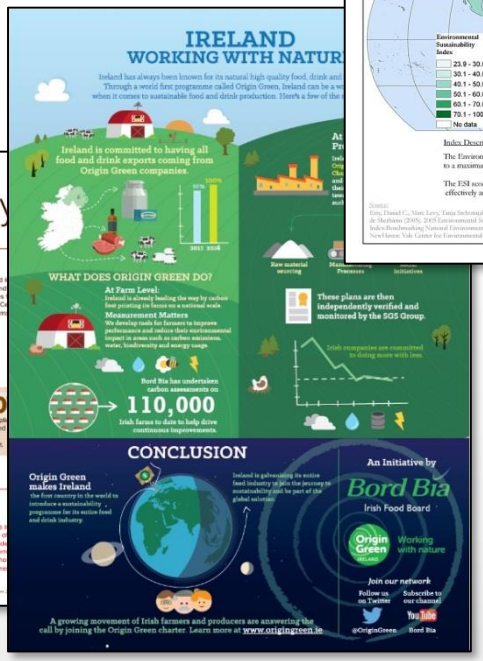
Company level

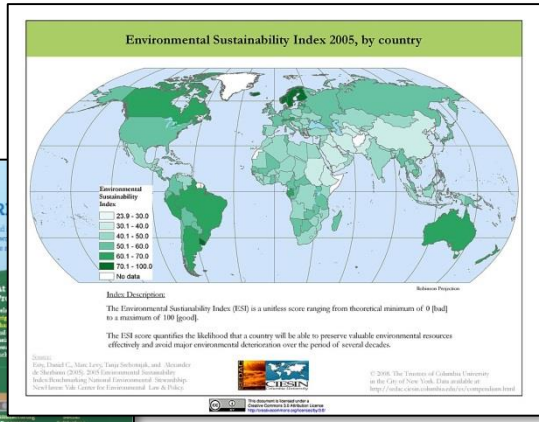
Sector level

Farm level









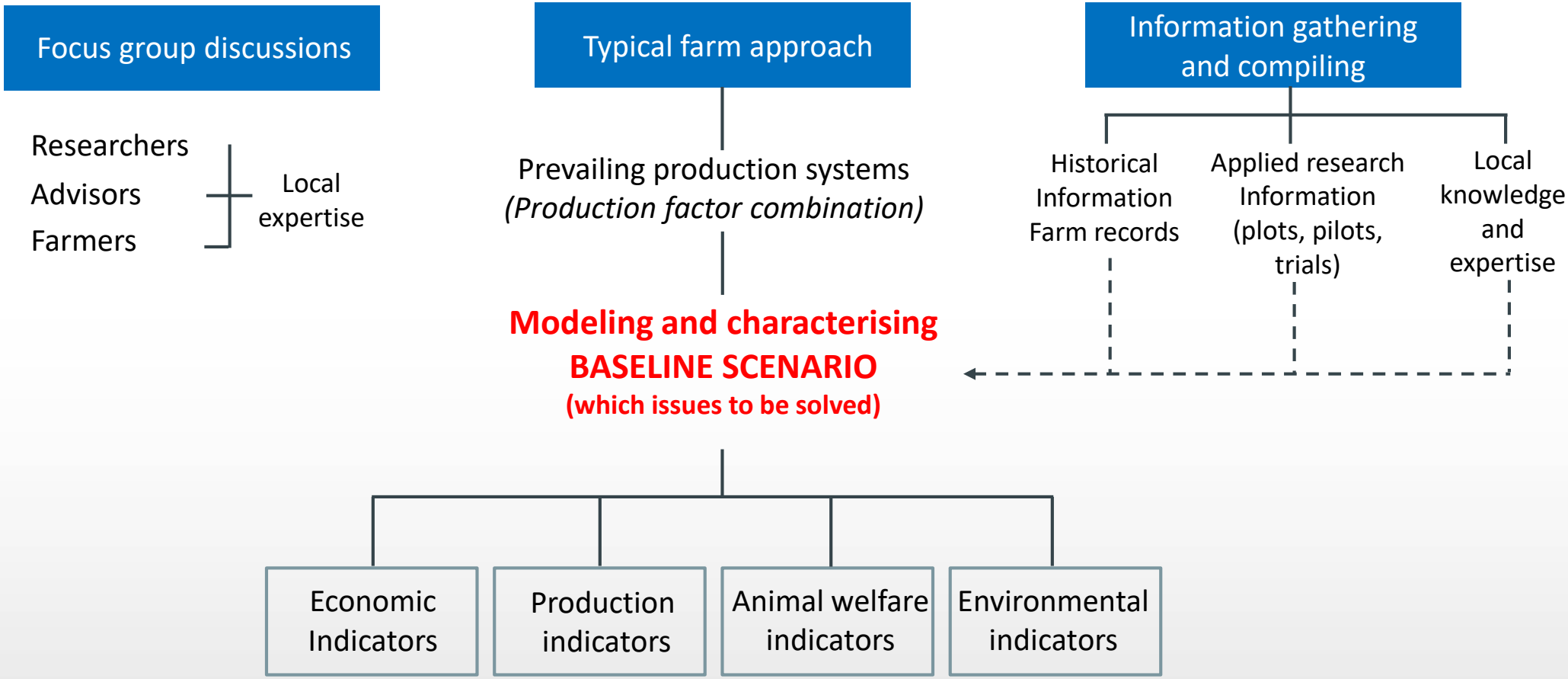
oaches

agri benchmark

THÜNEN

How to measure sustainability

agri benchmark models (Farm level)



How to measure sustainability

agri benchmark models (Farm level)

Focus group discussions

Researchers
Advisors
Farmers
→ Local expertise

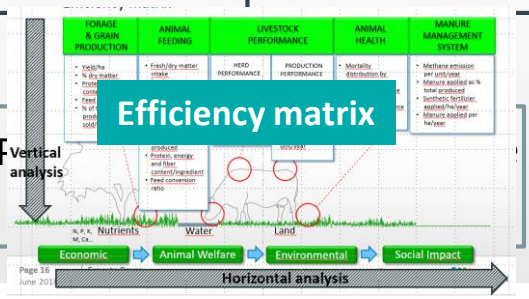
Typical farm approach

Prevailing production systems
(Production factor combination)

Information gathering and compiling

- Historical Information Farm records
- Applied research Information (plots, pilots, trials)
- Local knowledge and expertise

Modelling and characterising ALTERNATIVE SCENARIOS
(which issues are being solved)
Sustainable scenarios??

- Economic Indicators
- 

- Environmental indicators

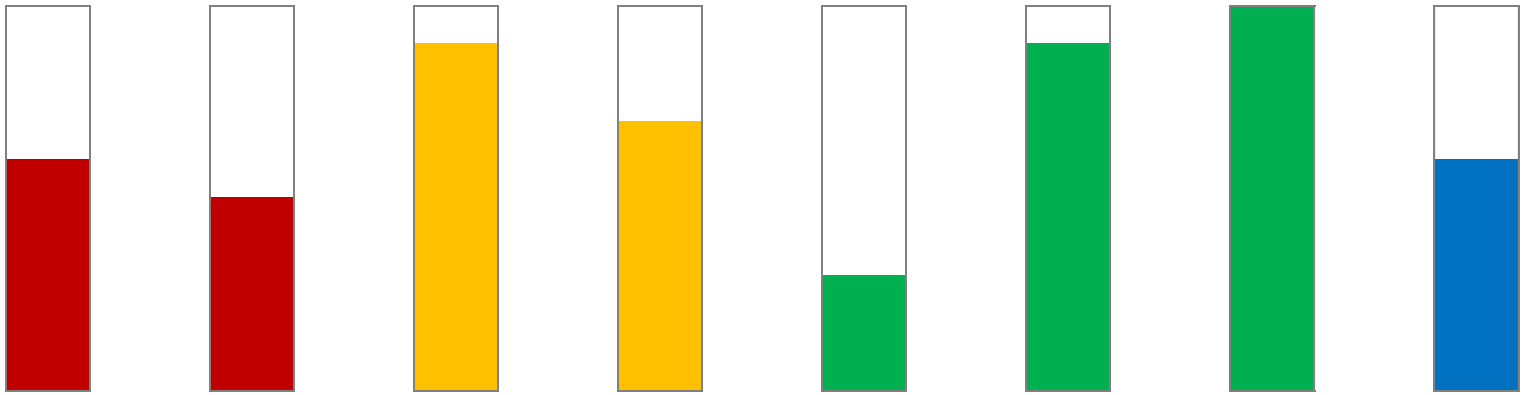
How to measure sustainability

Farm analysis sheet

Farm description

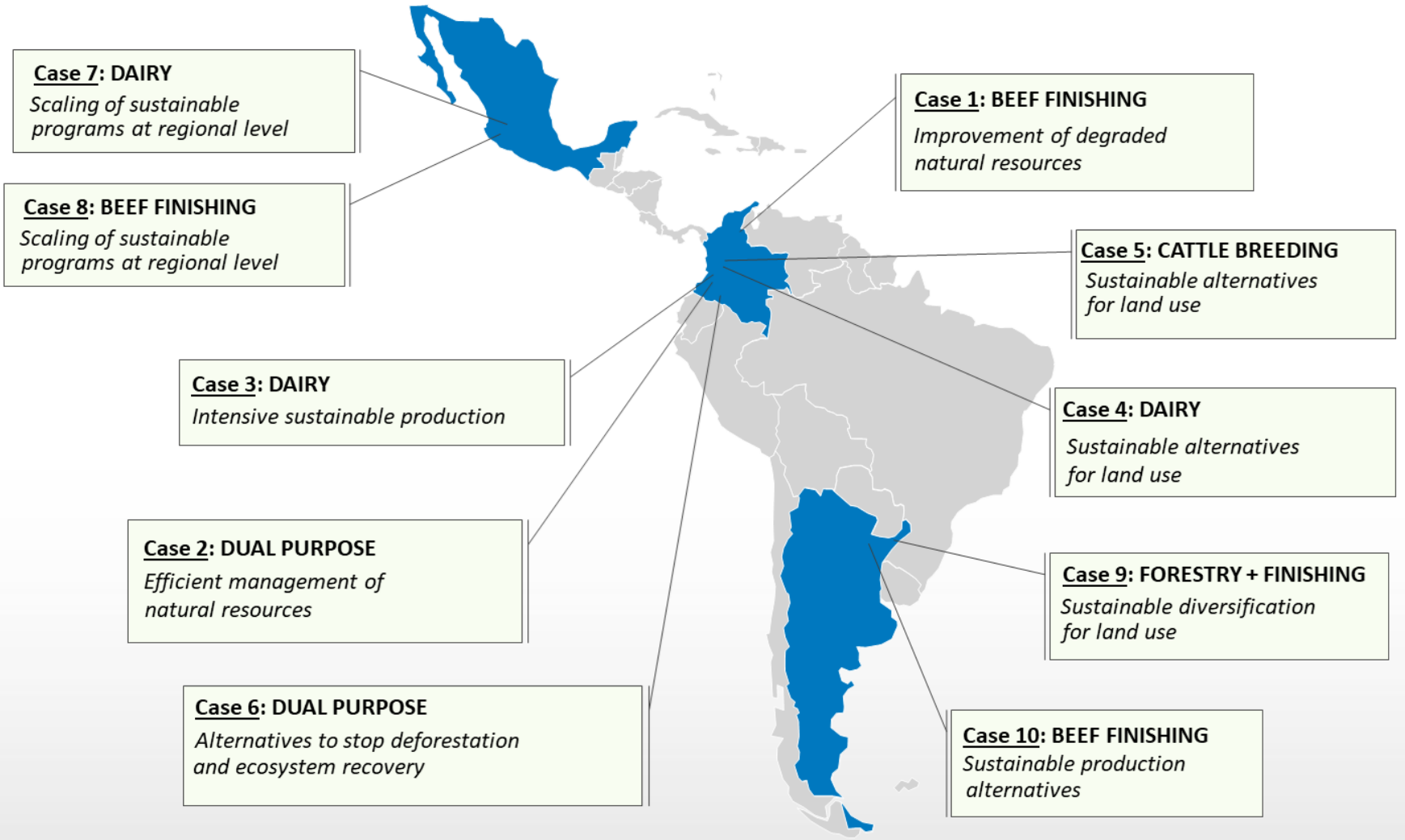
Cow-calf producer and beef finisher in Mecklenburg-Vorpommern, Germany
1400 cows and 800 finished animals

Level	Productivity		Economic		Environment			Animal welfare
Indicator	Stocking rate	Land productivity	Margin	Total cost	GHG Emissions	Nutrients	Water	Animal welfare
Reference *	10	10	10	10	10	10	10	10
Original value	6	5	9	7	3	9	10	6
Weight	1	1	1	1	1	1	1	1
Weighted value	6,0	5,0	9,0	7,0	3,0	9,0	10,0	6,0



* Reference can be a set value, an average or quantiles referring to a population or survey

How to measure sustainability



How to measure sustainability

Case 8 – BEEF FINISHING

MEXICO

Region: Michoacán

Climate condition: Dry subtropical

Baseline vs. SPS

From extensive land use to intensive sustainable production

SPS strategy implemented

Intensive SPS - Leucaena + Guinea

Sustainability issue to illustrate

Scaling up Intensive sustainable production

Emphasis on SDG

8 DECENT WORK AND ECONOMIC GROWTH

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

FORAGE PRODUCTION

Ton. dry matter/ha

187%

compared to baseline

LAND PRODUCTIVITY

Kg LW/ha

684%

compared to baseline

Total area: 60 ha.

% Area under SPS

100%

reached: 6th year

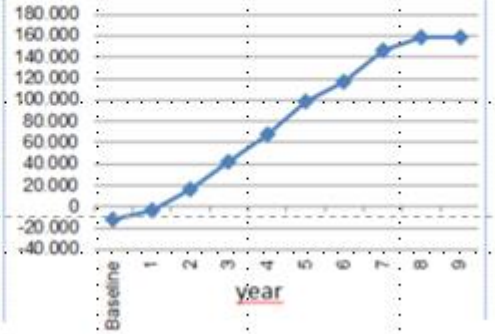
ECONOMIC RESULTS

Initial investment

USD/Ha.

1,274

Profit (USD/year)



ANIMAL WELFARE

Feeding
- ✓ Feed
- ✓ Water
- ✓ Body condition

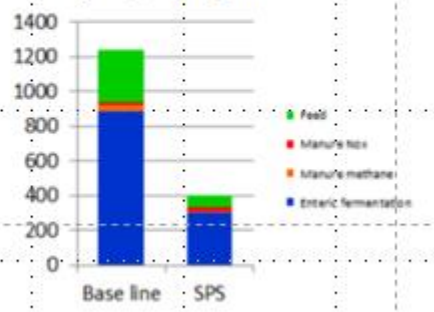
Health
- ✓ No clinical signs
- ✓ No lameness

Housing
- ✓ Shade, lack of heat stress
- ✓ Pastures
- ✓ Resting comfort

Behaviour
- ✓ Diverse positive behaviour
- ✓ No agression
- ✓ No signs of fear

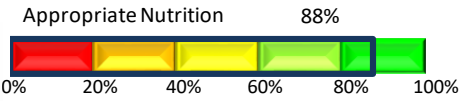
ENVIRONMENTAL IMPACT

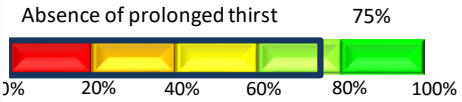
Kg CO_2 / 100 kg LW added

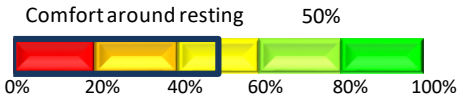


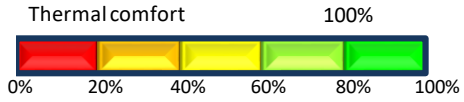
How to measure sustainability

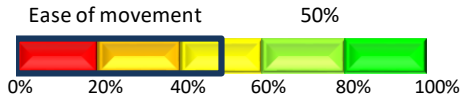
Animal Welfare prototype

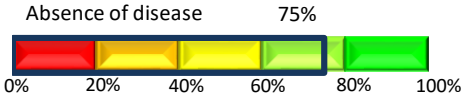


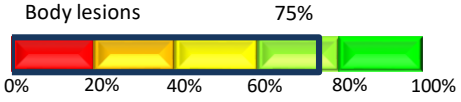


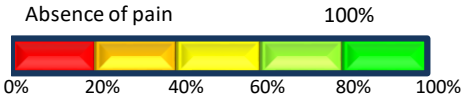


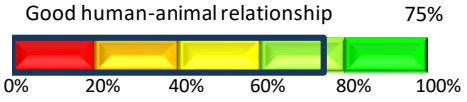


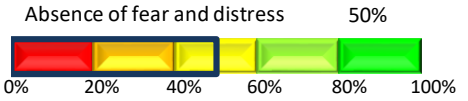


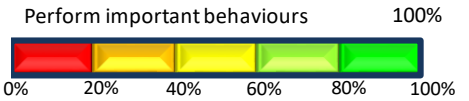


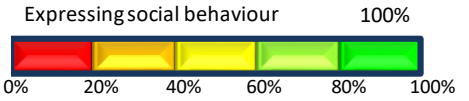












How to measure sustainability – new areas?

Global Agenda for Sustainable Livestock

Action Networks

Livestock for social development

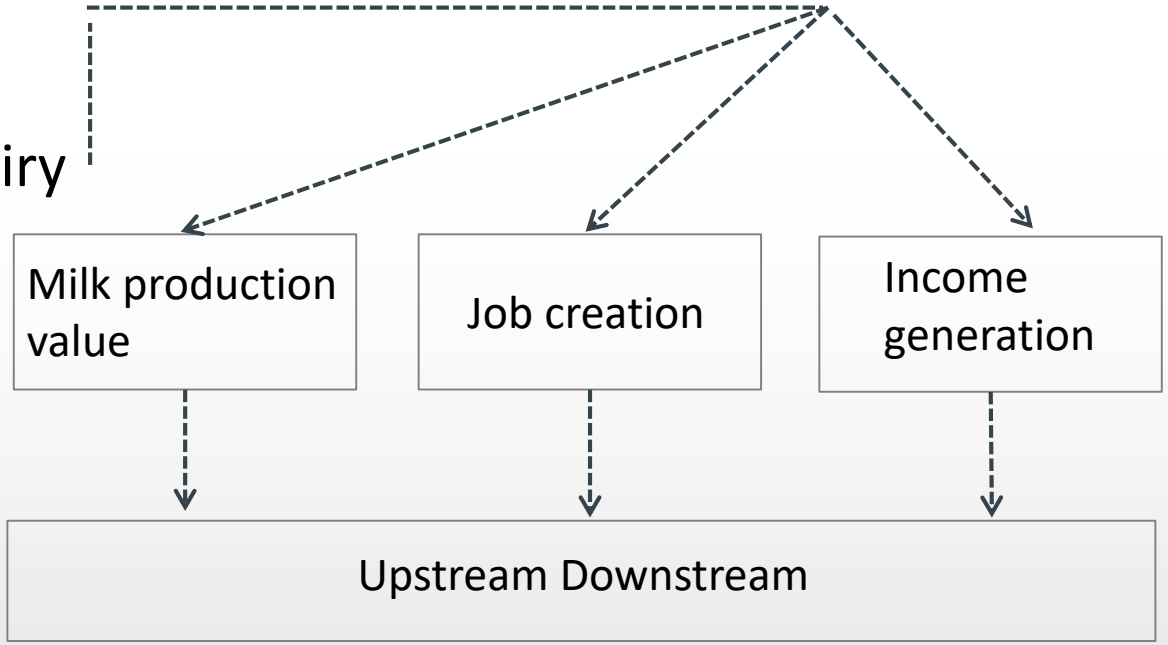
GLOBAL DAIRY PLATFORM
KNOWLEDGE · INSIGHT · GUIDANCE

IFCN
Dairy Data · Knowledge · Inspiration

Dairy Impact Methodology - DIM

What to measure (SCOPE)

- Current contribution of dairy
- What if analysis
- Return on Investment
- Social ROI



How to measure sustainability – new areas

Dairy Impact Assessment: Netherlands

Dairy Facts

Milk Production

16,0

Million Ton (ECM)

Number of farms

18

Thousands

Income

Turnover

6.214

Milk Production Value (Million USD/year)

Sector Impact

25%

of Agriculture GDP

Number of cows

2

Million cows

Employment

91.255

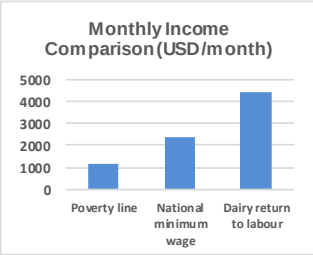
Total jobs created (direct-indirect)

Production / cow

8892

Litres cow / year

Farm Income Impact



Milk Deliveries

97

To formal markets

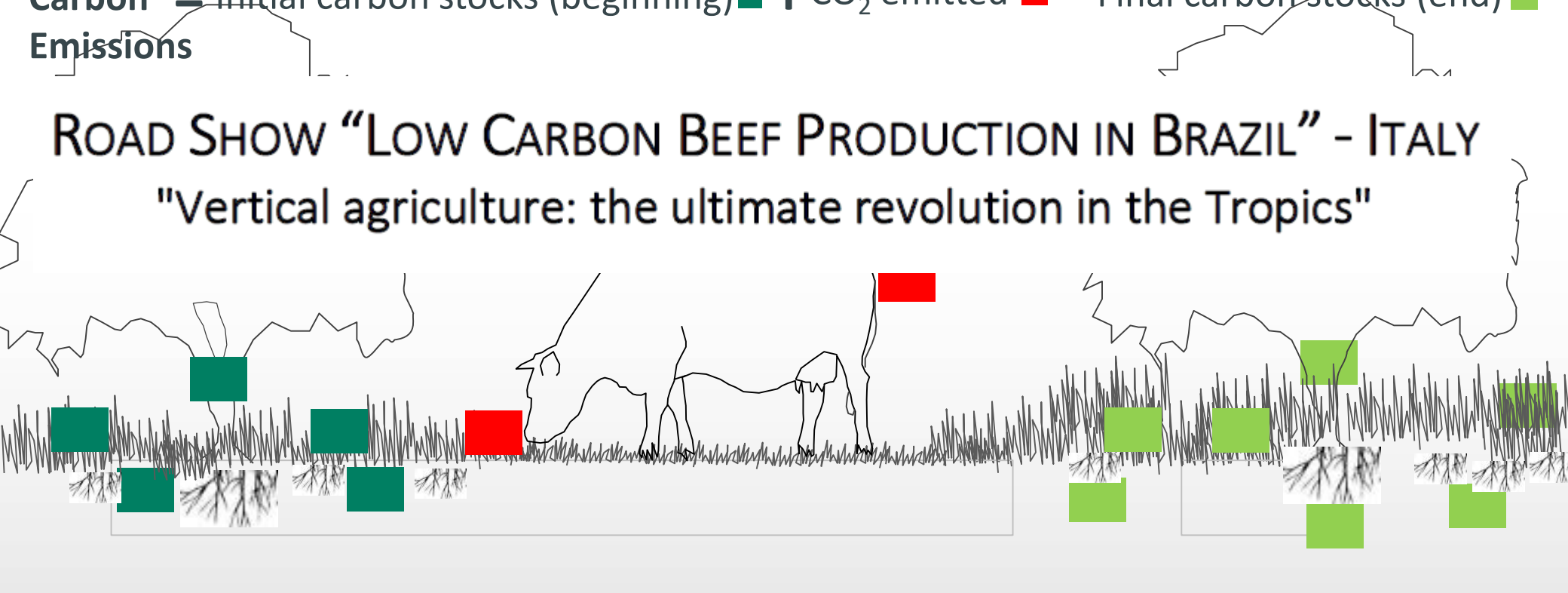
GLOBAL DAIRY PLATFORM
KNOWLEDGE · INSIGHT · GUIDANCE

IFCN
Dairy Data · Knowledge · Inspiration

How to measure sustainability – new areas

Low /neutral carbon beef Low / neutral carbon regions

Total Carbon Emissions = Initial carbon stocks (beginning) + CO_2 emitted − Final carbon stocks (end)



How to measure sustainability – new areas

Low /neutral carbon beef Low / neutral carbon regions

Content

1. Defining sustainability
2. How to measure sustainability
3. Some final considerations

Some final considerations

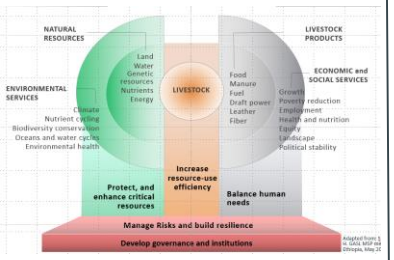
- ✓ For whom are they (we) reporting for
- ✓ Are they (we) using standardized metrics
- ✓ Can this information be aggregated
- ✓ Do they (we) have a baseline to compare with
- ✓ Who is leading and funding this process

Some final considerations

One conceptual approach

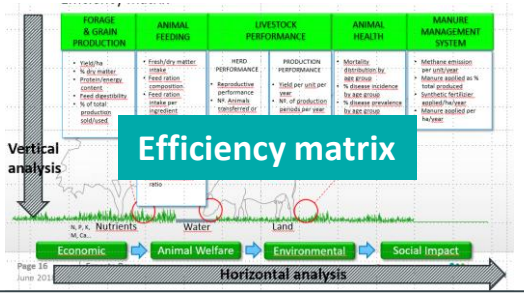
Principles for sustainable food and agriculture

- Increase natural resource use efficiency
- Protect and enhance critical resources
- Manage risk and build resilience
- Governance and institutions



Two guidelines and methods reference

leap | LIVESTOCK ENVIRONMENTAL ASSESSMENT AND PERFORMANCE PARTNERSHIP



Two conceptual frameworks

Four thematic areas

- Food and nutrition security
- Livelihoods and Economic Growth
- Health and animal welfare
- Climate and natural resources use

Seventeen SDGs

One global livestock platform

Global Agenda for Sustainable Livestock

One consolidated experience (farm level)

agri benchmark

Recent approaches for assessing sustainability at different levels

(*agri benchmark* experience)

Ernesto Reyes *agri benchmark* Beef and Sheep Network

Thanks.....