ProTerra Webinar Series 3#

Circular agro-food systems: The role of livestock in sustainable supply chains and tools to address challenges

Agenda

- Welcome
- Frank Gort, Program manager sustainable innovation, Nevedi – Dutch Animal Feed Industry Association
  Challenges in feed supply chains
- Jean-Louis Peyraud, French National Institute for Agriculture, Food, and Environment (INRAE)
  The role of livestock in sustainable supply chains
- Heleen van den Hombergh, Senior advisor agrocommodity governance, Lead responsible value chains, IUCN
  Match! Smart combinations as the way to go in soy governance
- Q & A

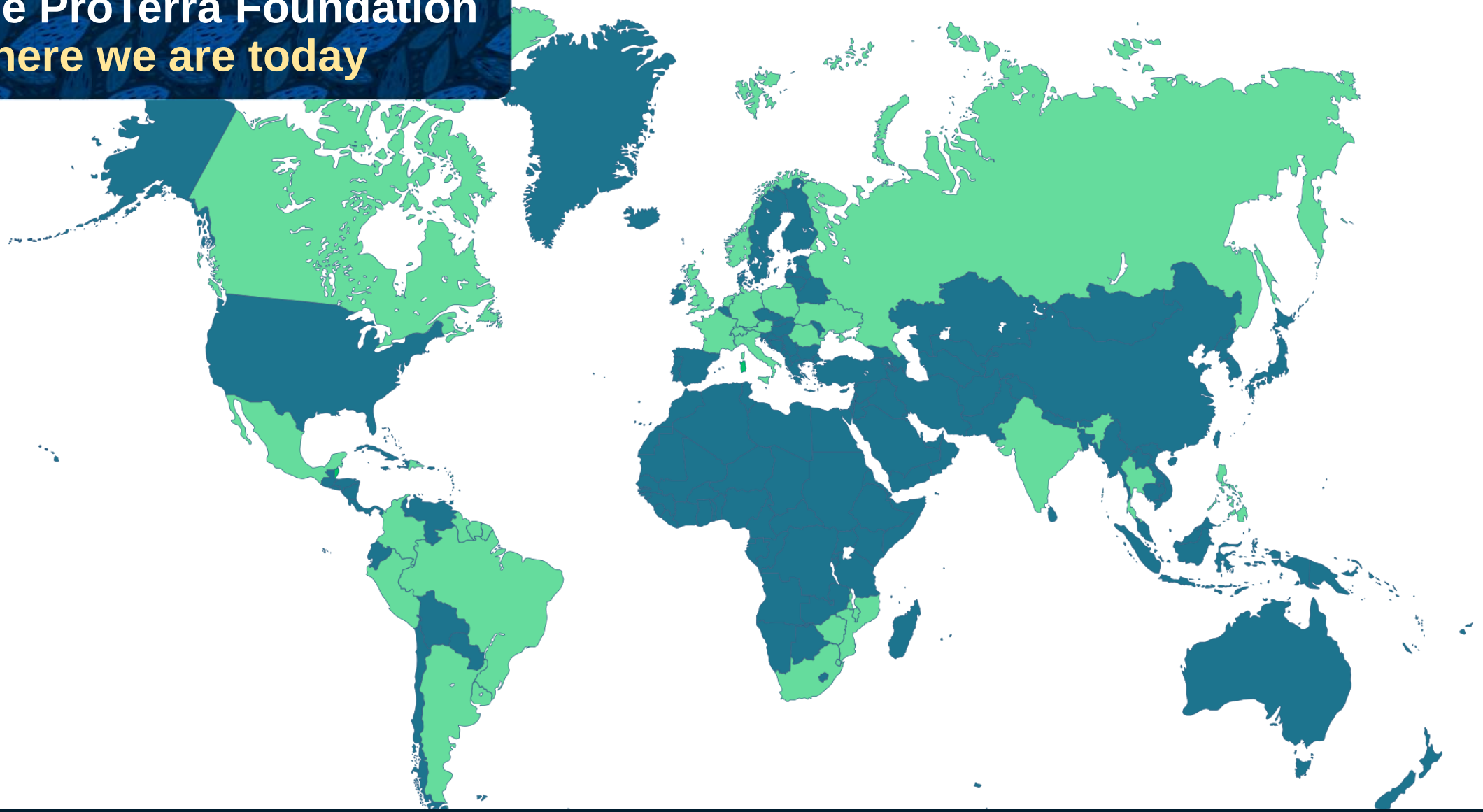
Who we are

The ProTerra Foundation is a non-for-profit organization, located in the Netherlands

We envisages a world where all businesses:

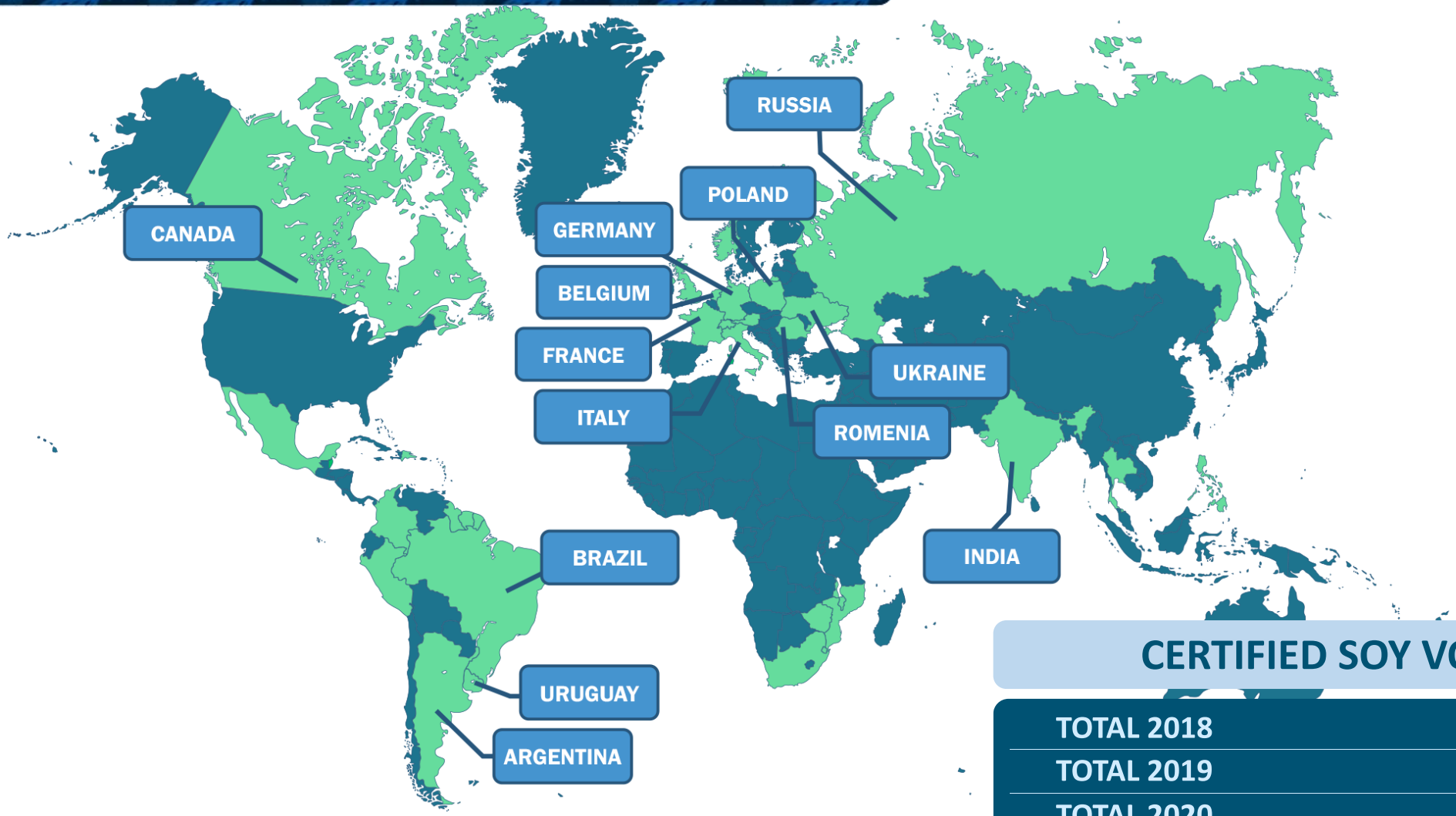
- contribute to the protection of biodiversity by e.g. switching to non-GMO production
- conserve natural resources and
- ensure that workers and local communities are treated with dignity and respect

The ProTerra Foundation
Where we are today



Argentina, Austria, Belgium, Belize, Brazil, Canada, Colombia, Eswatini, Germany, Dominican Republic, France, Guadalupe, Guyana, India, Italy, México, Malawi, Mozambique, Netherlands, Norway, Peru, Philippines, Poland, Romania, Russia, South Africa, Switzerland, Thailand, Ukraine, United Kingdom, Uruguay and Zimbabwe.

The ProTerra Foundation in numbers
SOY 2020



CERTIFIED SOY VOLUME

TOTAL 2018	3.511.000,00
TOTAL 2019	2.988.373,87
TOTAL 2020	3.032.171,39

The ProTerra Foundation in numbers
SUGARCANE 2020

verification
certification

SUGARCANE ANNUAL CRUSH (mt)					
2018		2019		2020	
	8.197.722,00		15.445.465,75		27.182.377,44
	6.196.524,00		5.853.695,16		7.836.268,00
Total	14.394.246,00	Total	21.299.160,91	Total	35.018.645,44

ProTerra

Circular agro-food systems:
The role of livestock in sustainable supply chains and tools to address challenges

Challenges
in feed supply chains

Frank Gort
Program manager sustainable innovation

Nevedi
Dutch Feed Industry Association

Agenda

1. Facts & Figures
2. Core strategy
3. Circular agriculture
4. Sustainable feed supply chains
5. Challenge I: Deforestation
6. Challenge II: Carbon Footprint
7. Facing up to challenges

Fact & Figures

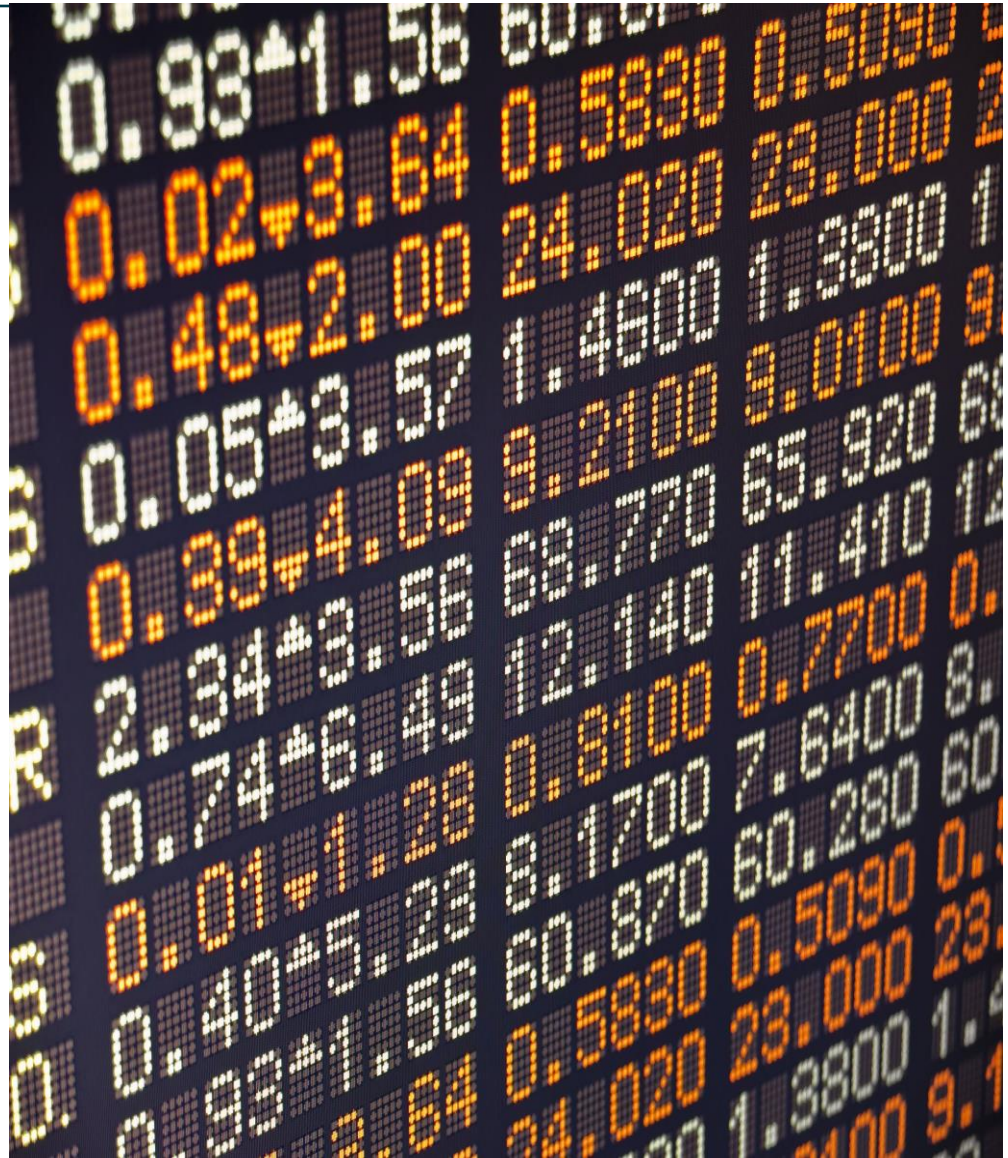
90 companies (members)

11,7 mill. mton compound feed (2020):

Category	mill. mton
Cattle feed	4,1
Pig feed	4,2
Poultry feed	3,0
Other Feed	0,4

Turnover sector ca. € 5,1 miljard

5.500 employés (85% male)



Nevedi Strategy 2020 - 2025

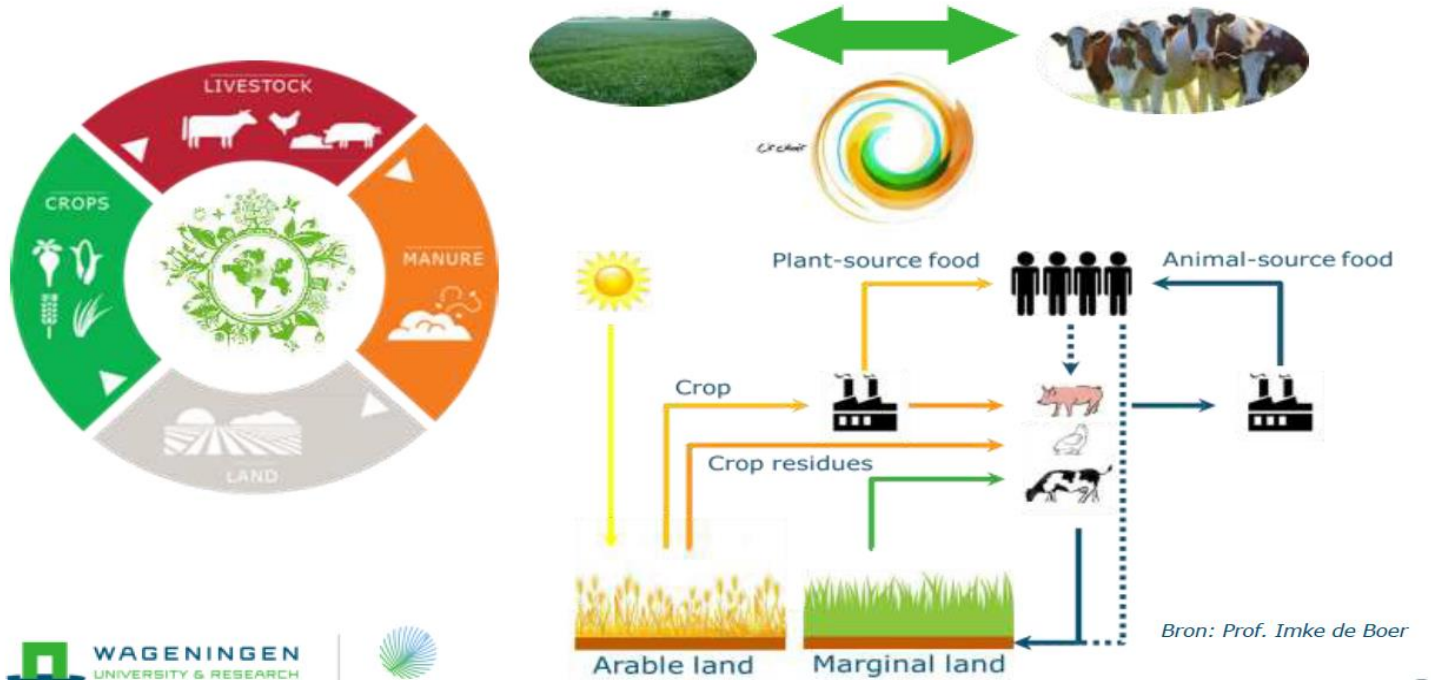
What do we want?

Helping to realize a sustainable, climate-friendly, circular agriculture that is internationally leading, further reinforcing our competitiveness and innovation force and strengthening our economic base through cooperation in supply chains

How?

We play an important role in the coming years in close cooperation with supply chain partners, public authorities and NGO’s in

Circular agriculture Nevedi style



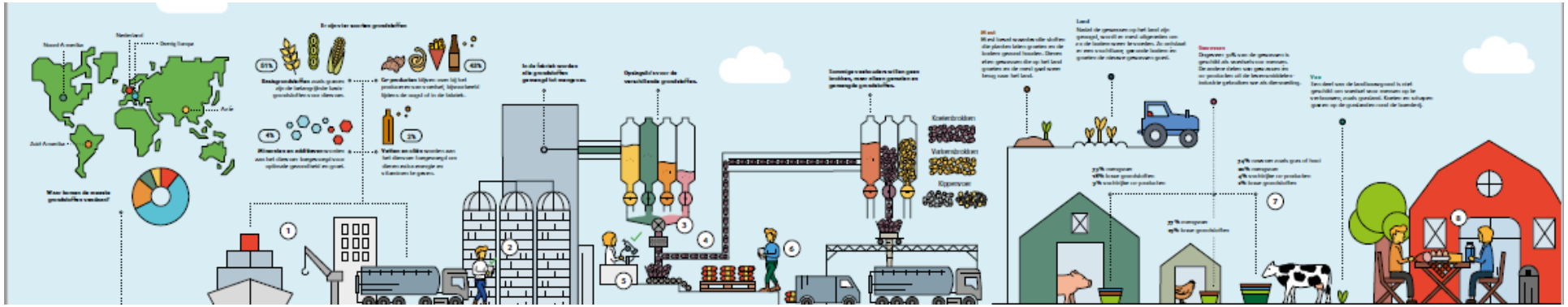
Our ambition:

- Reduce CFP animal-based food
- Make the food system more circular

How?

- ✓ Minimize losses from the food/feed/manure/soil cycle
- ✓ Source as local as possible, but as global as necessary
- ✓ Support chain partners to reach climate goals
- ✓ Maximize the use of co-products, minimize the use of food grade raw materials

Sustainable feed supply chain



Our ambition:

Proven & transparent sustainable import

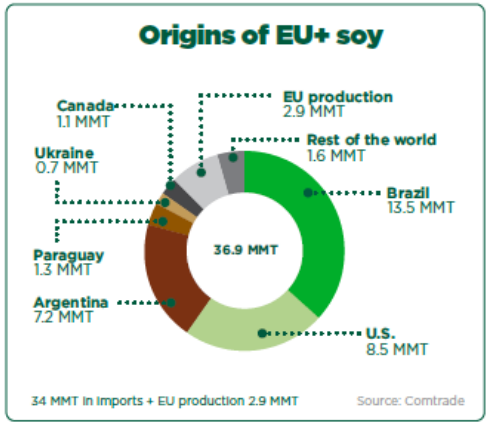
Meet public and market demands

How?

- ✓ Secure access to international markets.
- ✓ Transparent about economic & environmental impact
- ✓ Support increased use of alternative protein sources
- ✓ Continue and intensify efforts in soy and palm oil
- ✓ Do not compromise on feed & food safety, animal health & welfare

Challenge I Deforestation

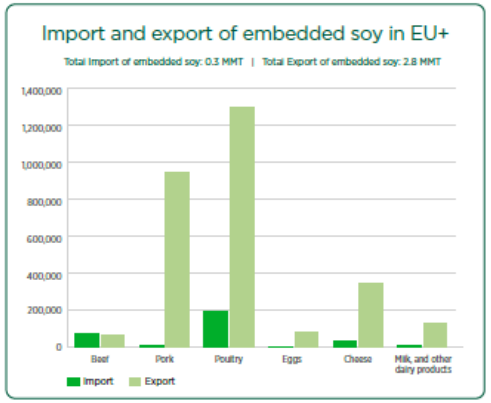
EUROPE OVERVIEW



32.7 MMT
Soybean meal available**

2.55 MMT
EU+ net export embedded soy

30.15 MMT
EU+ soybean meal consumption
32.7 - 2.55 = 30.15



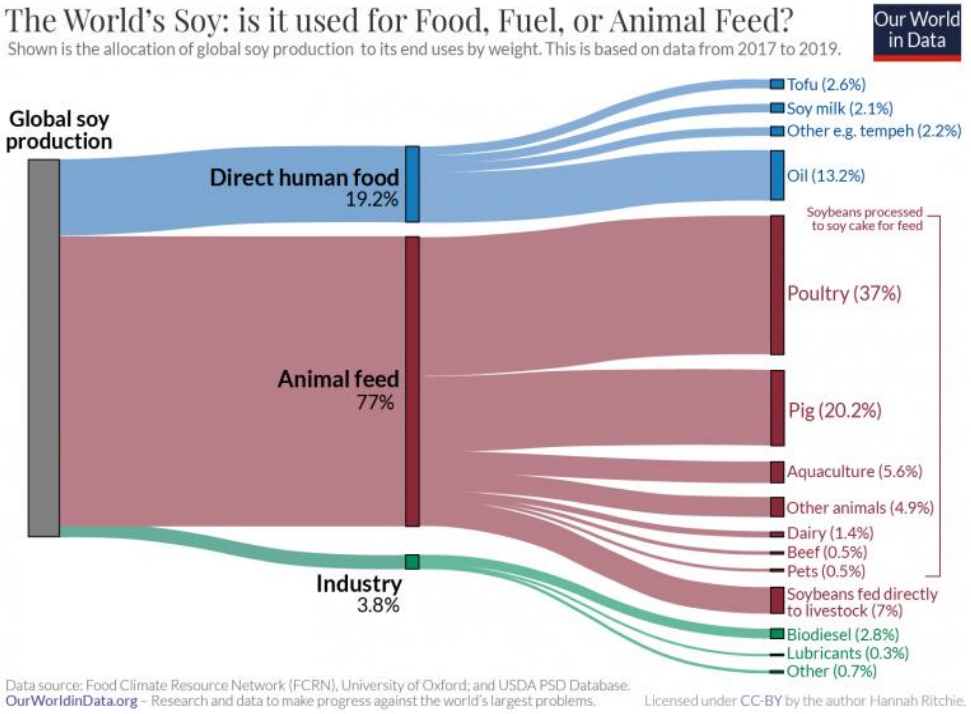
FEFAC estimated that **77%** of EU soy imports are from **low deforestation risk areas**

GLOBAL OVERVIEW

359 MMT
global soy production

22.5 MMT
is FEFAC SSG compliant soy

125 M
hectares total production



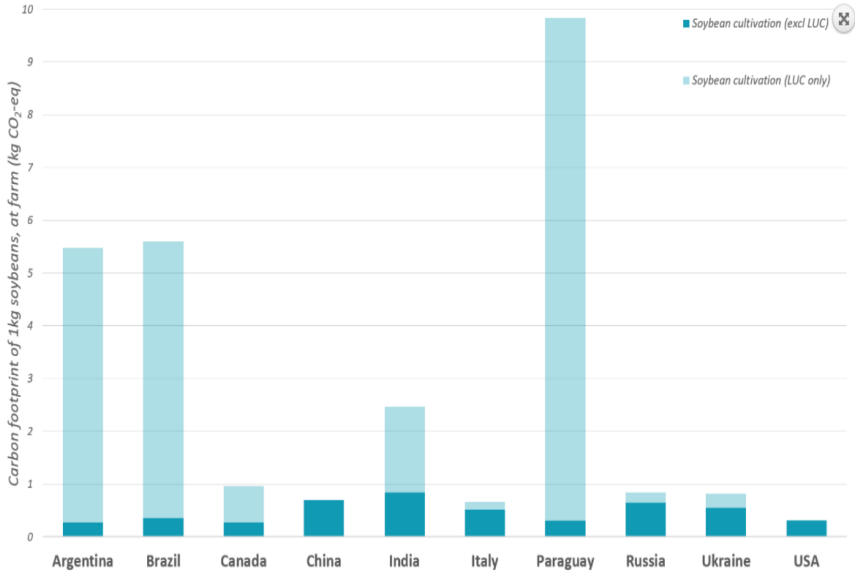
Challenge I Deforestation

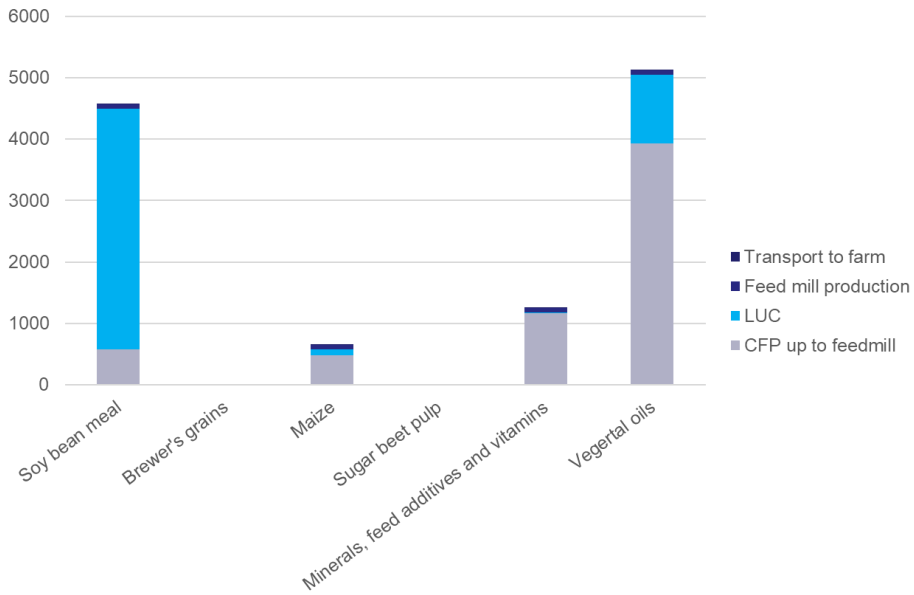
- EU policy: less dependant on deforestation-risk commodities (legal enforcement)

HOWEVER

- We should remain active in high-risk areas. We only have impact on sustainable sourcing as long as we have a market presence.

Challenge II Carbon Foot Print





Challenge II Carbon Foot Print

- CFP animal-based products is substantial
- Largely dependant on CFP feed
- Raw materials choices have a large influence.
- Climate targets in supply chains could stimulate avoiding high risk deforestation areas as a result of elevated CFP related to LUC

HOWEVER

- LUC related CFP expires after 20 years
- Support local farmers that meet criteria (carbon credits) and look at broader range of environmental effects / SDG’s

Facing up to challenges

CO-OPERATION	This requires time and effort from all supply chain members worldwide
CELEBRATE SUCCESSES	Instead of focussing on what is wrong, stimulate and multiply good examples
TRANSPARANCY	Be open and learn from failures
MULTI –LEVEL	A successful transition demands co-ordinated action, on various levels
INTEGRATED	Sustainability is beautiful thing of many colours. An integrated approach is required to prevent trade-offs

Thank you

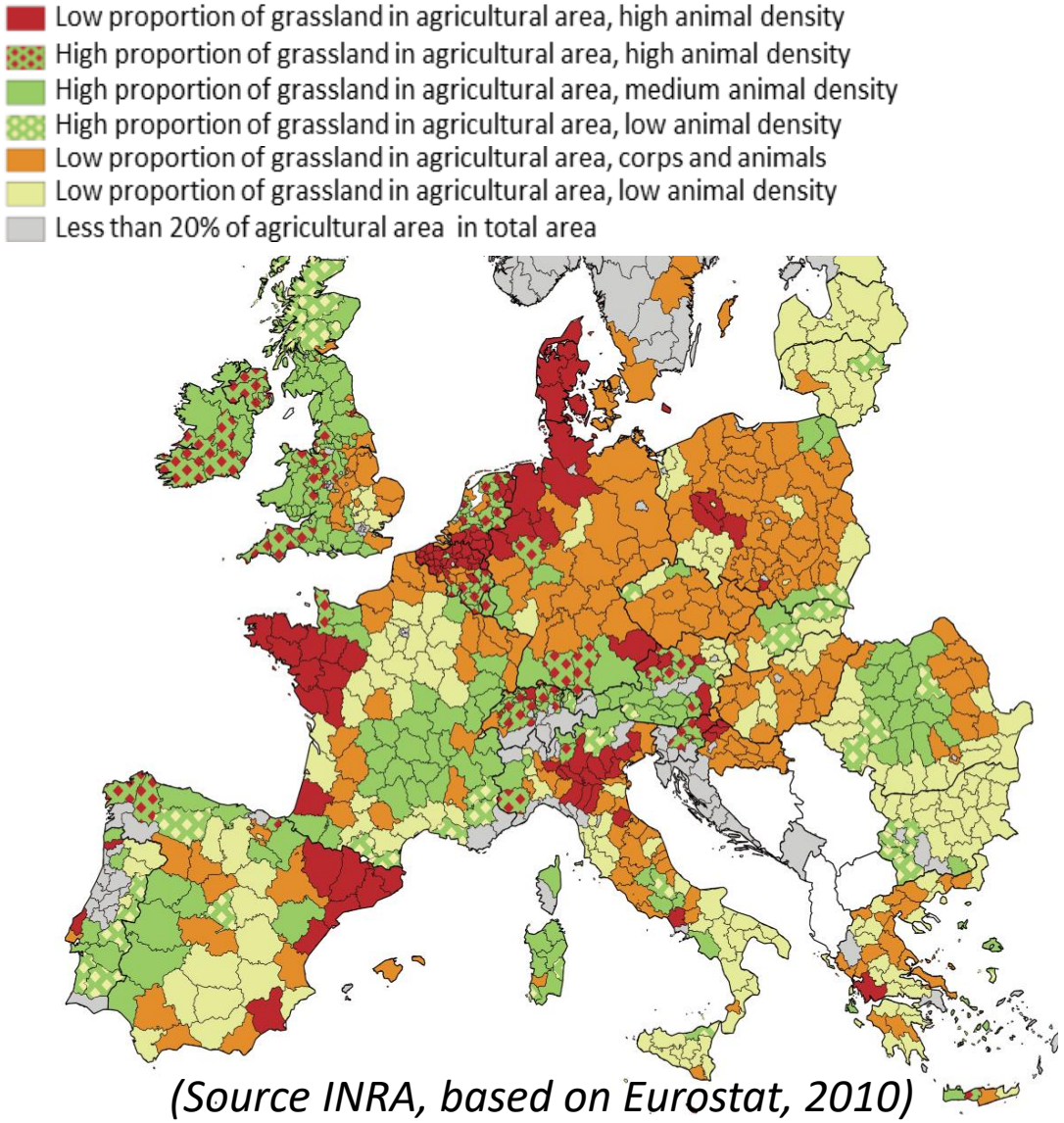



The role of livestock in sustainable supply chains

Jean-Louis Peyraud

INRAE
la science pour la vie, l'humain, la terre

Livestock farming is of crucial importance for many EU regions with a diversity of situations



(Source INRA, based on Eurostat, 2010)

	AA (% total)	LU (% total)	LU/ha
	10.5	29.5	2.15
	6.7	14.6	1.70
	19.3	18.5	0.75
	6.8	2.1	0.25
	31.6	26.6	1.20
	25.0	8.6	0.30

- Livestock are present in almost all regions of Europe, 58% of EU farms hold animals,
- A third of all farm animals are concentrated within a small number of areas,
- On the mean 1 LU/ha EU Agricultural Area.

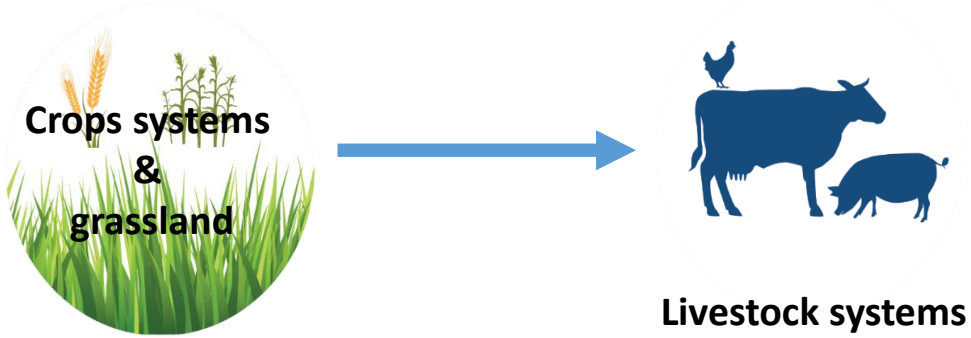
Part 1

Livestock as part of circular and sustainable supply chains

The green revolution was largely based on linear approaches: productivity first

Systems have become more intensive more specialized, spatially separated

Monocultures
Mineral N fertilizer
Pesticides



High level of N outputs
GHG emissions
Welfare issue
Antibiotics

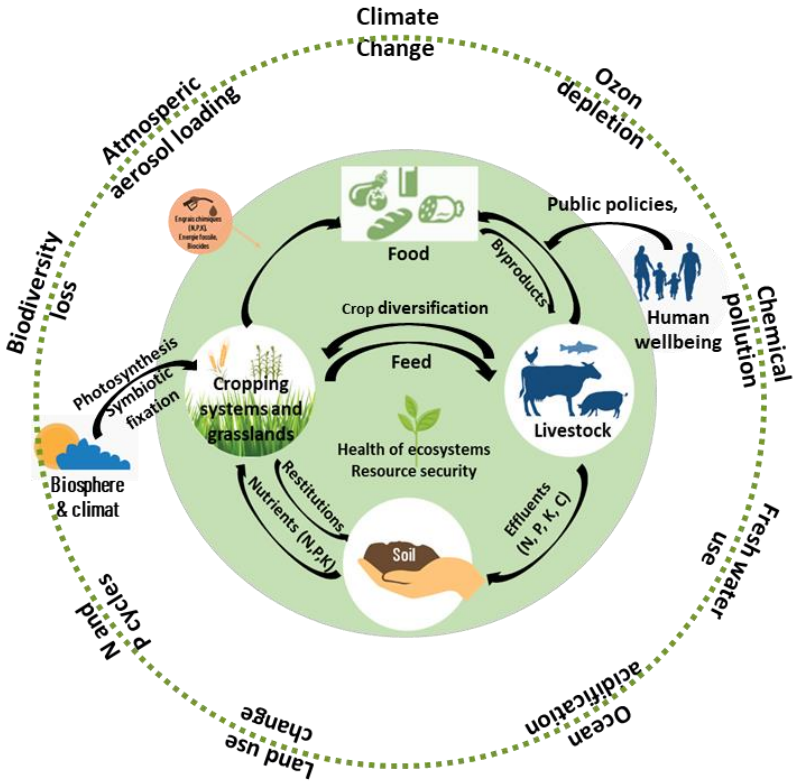
- Significant productivity gains but
- No consideration of the amount and origin of mobilized resource: resource insecurity
- Loss of soil fertility, loss of biodiversity, degradation of ecosystems

- **Livestock farming has lose a large part of its legitimacy**
- **A society calling for agriculture to change**

A new paradigm for thinking the future of livestock farming

- **A conversion of the agricultural sector** is required that targets nearly every aspects

Connected circularity in planet boundaries: a challenge for livestock



ATF-P4F policy brief, (2020)

Expected benefits

- **Efficient use of scarcely renewable resources,**
- **Food sovereignty and protein autonomy,**
- **Recycling biomass between sectors : no wastes,**
- **Adaptation to climate change,**
- **Low use of pesticides and mineral fertilisers,**
- **GHG mitigation and C sequestration,**
- **Closing nutrient cycles,**
- **Restauration of biodiversity,**
- **Restauration of soil fertility and ecosystems.**

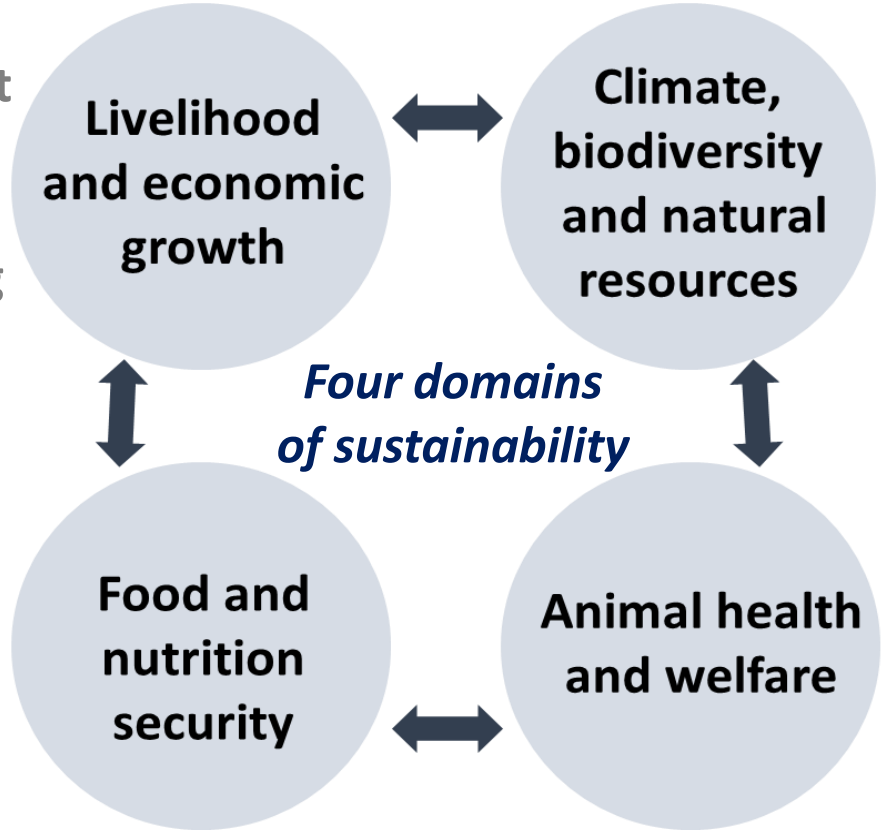
Difficulties

- **Balances are to be found according to local context,**
- **New coordination between actors of the value chain,**
- **New business models to share value-added,**
- **Public policies to support transitions.**

Avenue for progress: Rethinking the performances of the livestock systems

- creating attractive employment opportunities in economically viable livestock systems.
- Increasing resilience of farming systems

- Understanding how and to what extent livestock systems and animal based food will contribute to sustainable and healthy food systems



- Maximising GHG mitigatation and soil C sequestration,
- Recycling to maximize resource use efficiency and avoid losses
- Restoring biodiversity and fostering high natural value farmlands

- Developping Integrated management of animal health
- Preventing and building resilience to pandemics.
- Improving animal welfare

(ATF-Strategic Research and Innovation Agenda, 2021)

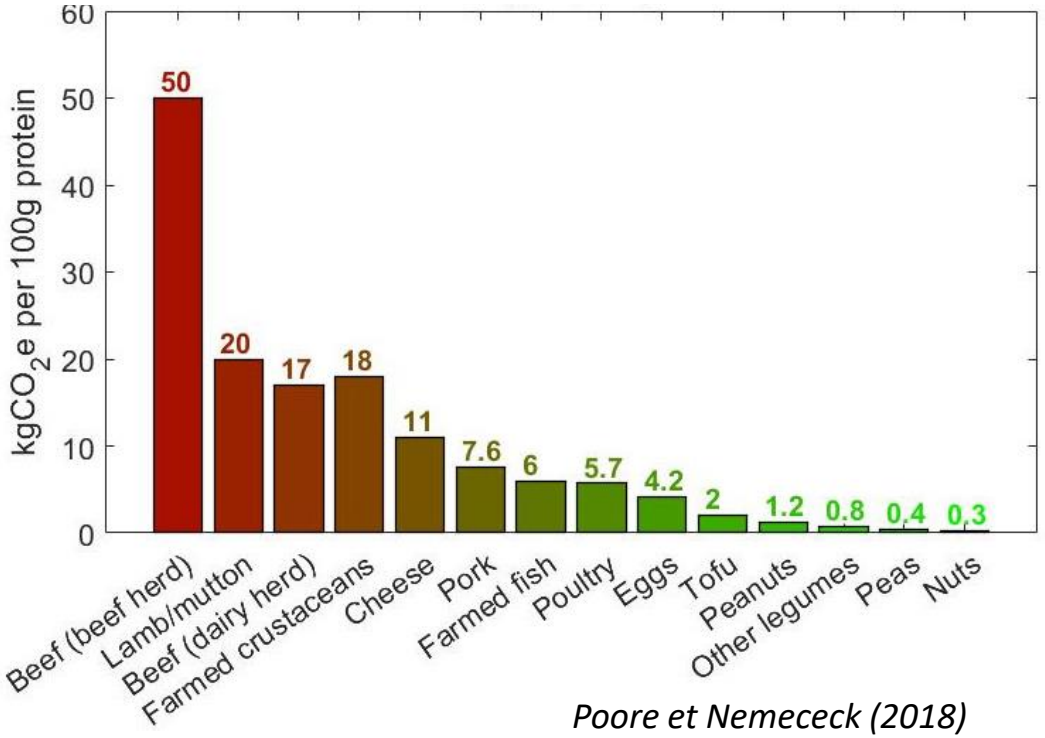
Part 2

Mitigating the shadows of livestock farming while maximising the positive contributions

LCA have consistently shown the impacts of livestock

- **High impact of Animal based products,**
- **The impacts of the lowest-impact animal products exceed average impacts of plant proteins (GHG emissions, eutrophication, acidification and frequently land use),**
- **High variation among both products and producers.**

Kg CO_2-eq / 100 g protéine



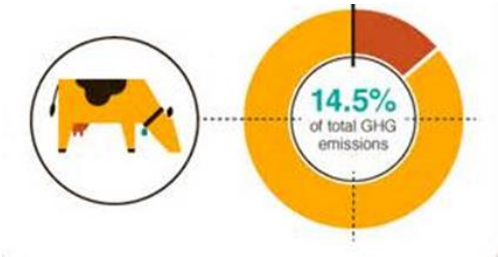
Poore et Nemececk (2018)

- ***Maybe simplistic, but reminds us that we need to find ways of improving the sustainability of livestock farming***

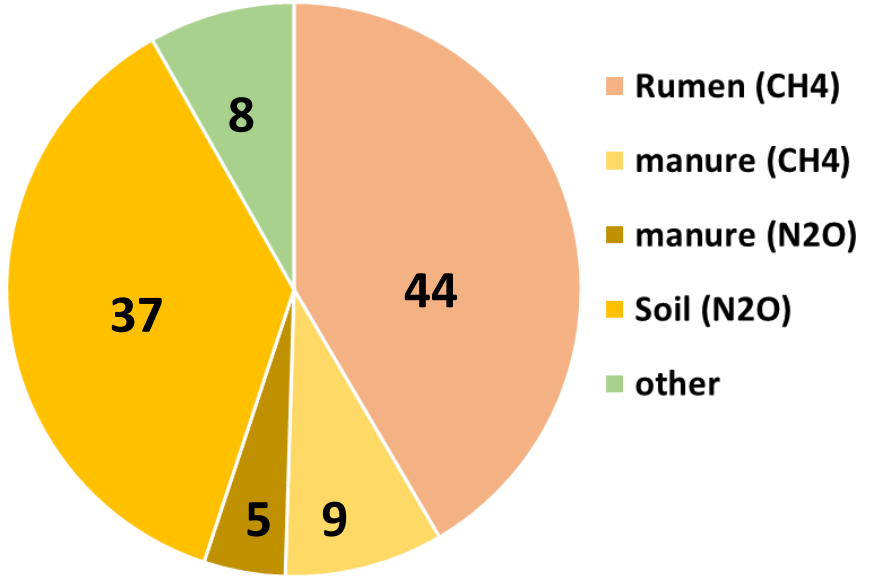
1. On farm GHG emission of Livestock sector

Livestock emissions (Gt CO_2-eq)	
Europe	0.25
World	8.1

Food and Agriculture Organization of the United Nations *(FAO, 2019)*



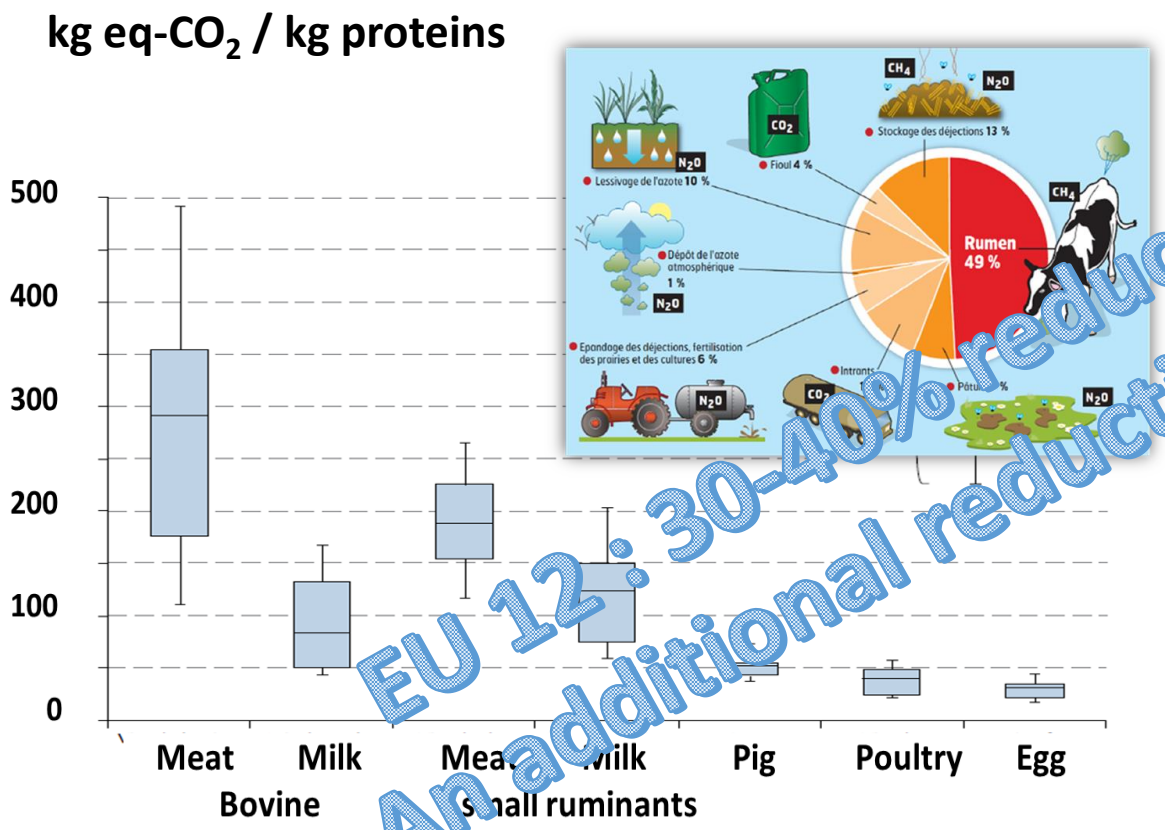
Sectors	% total
Agriculture *Livestock*	10 *7*
Industry	38
Transport	21
Tertiary	12



European Environment Agency, (2019) – mean 2003-2018

- **Further emission arise outside of EU. Globally livestock represents 85% of EU Agricultural emission,**
- **Enteric CH_4 and soil N_2O emissions are major issues.**

1. GHG mitigation options for the EU livestock



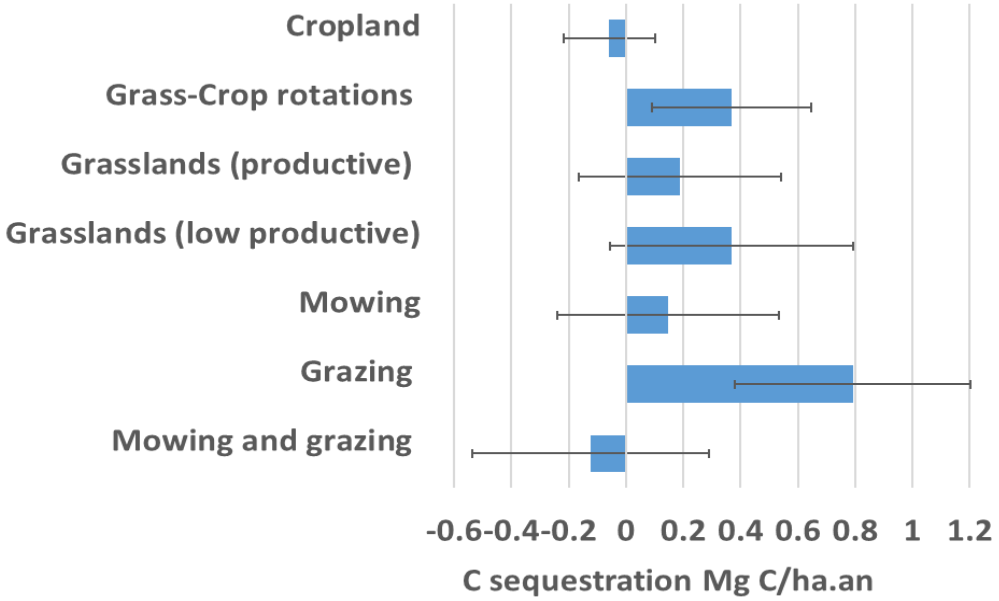
From Gerber et al., 2013

EU 12 : 30-40% reduction since 1990
An additional reduction of 40% in 2050

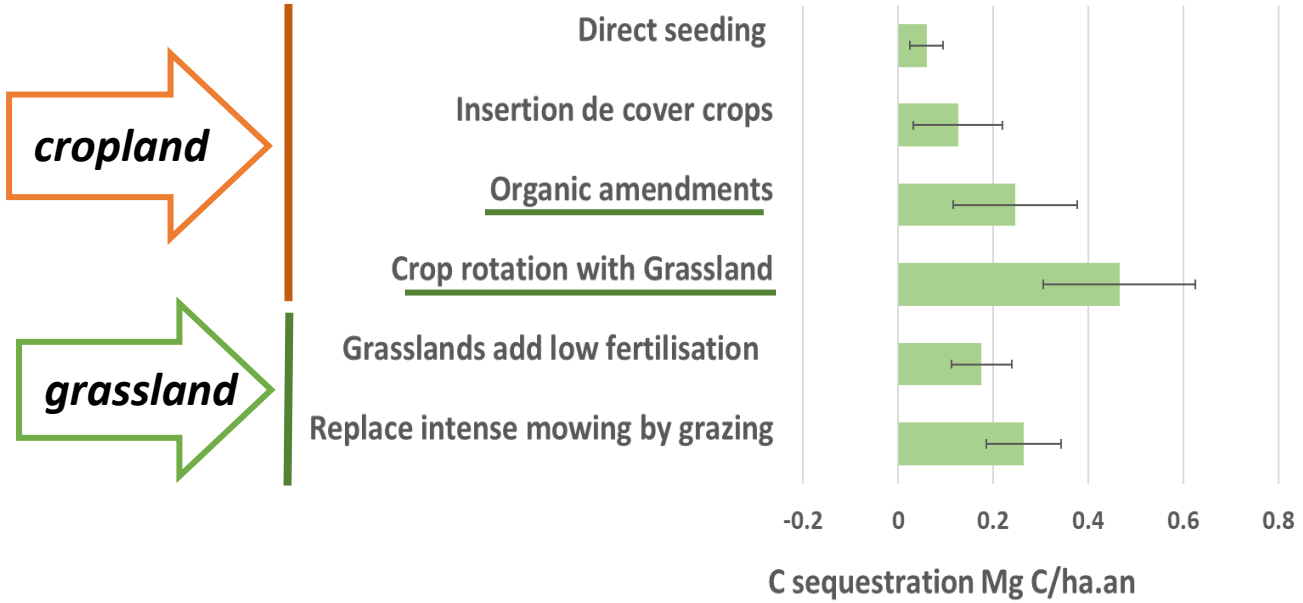
Herd efficiency	Genotyping low emitting animals
	Improved feed quality
	Improved feeding practises
	Improved herd management
	Improved animal health
Circularity	Smart use of manure
	More efficient use of crops
	No specific feed production
	Better agricultural land use
Nature based solutions	Increased use of legumes
	Producing green energy (manure)
	Increased Soil C sequestration

1. GHG mitigation: soil C sequestration

- **Current C sequestration potential (France)**



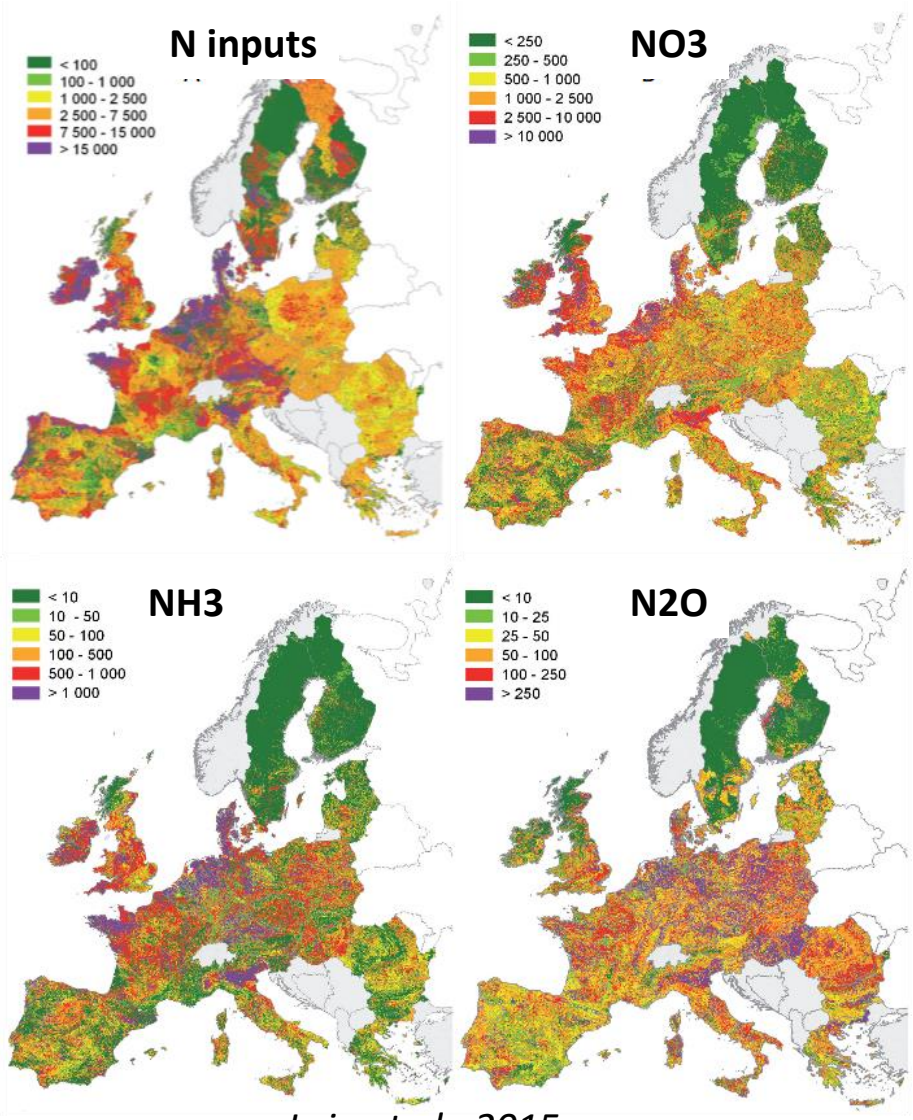
- **Additional C sequestration potential for promising levers**



French 4P1000 study (Pellerin et al., 2019)

- ***Considerable variations of C sequestration related to climate, management and vegetation type (high sequestration potential from grasslands)***
- ***Large potential for additional C sequestration: Livestock and grassland play a decisive role***

2. Mitigation of local impacts of livestock farming



Leip et al., 2015

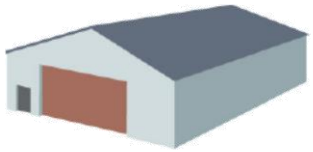
- **Livestock farming is responsible for**
  - **80% of N of agricultural origin present in all aquatic environments,**
  - **90% of NH_3 emissions of the agricultural sector.**

> 60% reduction

- **Reducing feed-protein inputs,**
- **Smart use of manure to avoiding losses between animal and effective N supply to the soil,**
- **Bio-refinery of manures using cascading approach: high value ingredients – Minerals – Energy.**

2. Mitigation of local impacts: manure management

- **NH3 emission**



Housing

27 %

Frequency of scraping, avoiding urine-faeces mixing

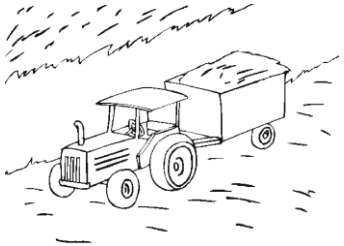
Up to -30 %

Storage

26 %

Covering storage tanks

Up to -80 %



Spreading

32 %

Acidifying manure

Up to -80 %

Burying manure

- 30% (24h after spreading)

- 90% right after spreading

Grazing

15 %

Henning et al 2011; Martin et al. 2013; CITEPA 2019

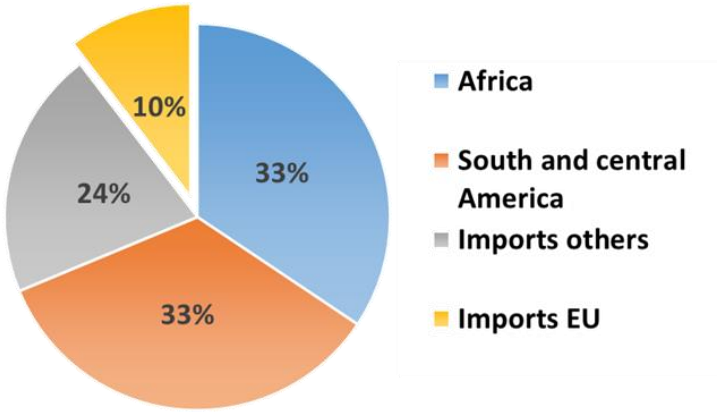
- ***More efficient use of manure allows to reduce mineral N inputs***
- ***Some of the best practices for NH_3 mitigation are also efficient for GES mitigation***

3. Livestock and biodiversity: a complex relationship

- Livestock contributes to biodiversity loss through different drivers
- Within each driver, livestock can have positive contributions

3. Livestock and biodiversity: need to consider different time and geographical scales

- **Deforestation is a major cause of biodiversity decline**

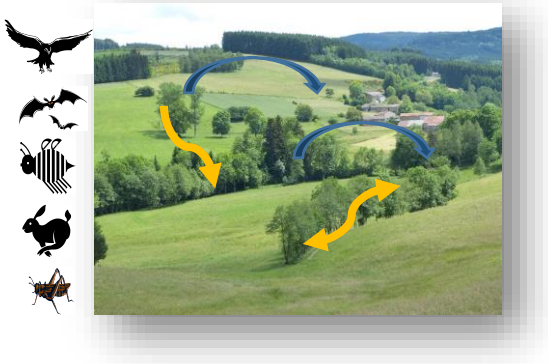


  - Eu = 10% of the global embodied deforestation: soya, meat, palm oil, cocoa, rubber, timber
  - Toward a EU livestock sector with no imported soya

(European commission, 2019

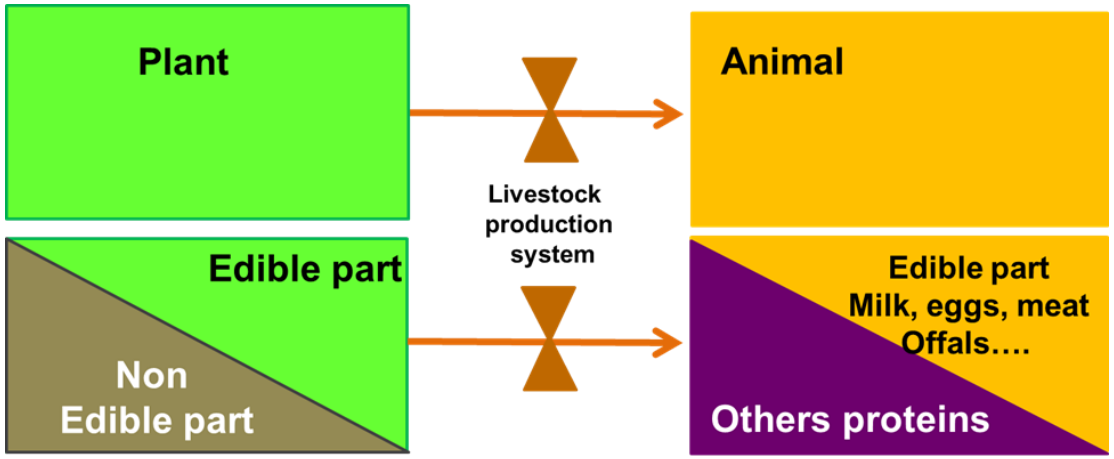
- **Livestock (ruminant) can produce biodiversity**
  - Diversity of forage species (including honey plants) and grassland types

  - Diversification of land uses, preservation of landscapes, habitats and ecological corridors



4. Resources: Do livestock use resource inefficiently?

kg of animal protein (milk, meat) / kg of plant protein used as feed



kg of edible animal protein (milk, meat) / kg of edible plant protein used as feed

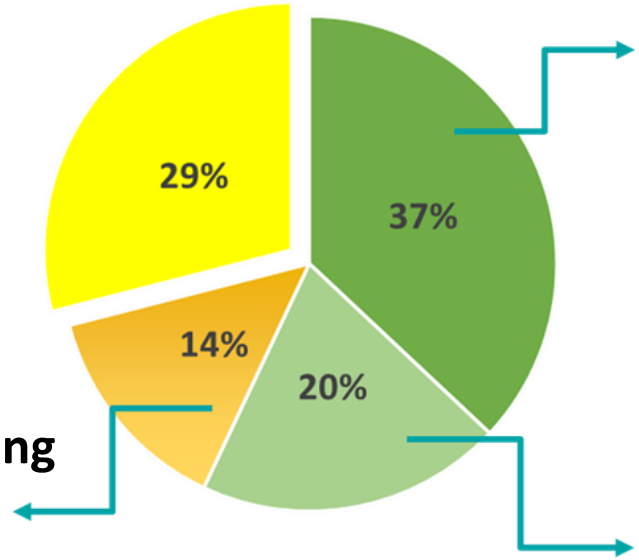
Ruminants	Non ruminants
0.10 to 0.30	0.30 to 0.45
0.5 to > 2.0	0.4 to 1.5

Wilkinson, 2011; Ertl et al., 2015; Laisse et al, 2019)

Livestock farming is more efficient than often claimed

4. Resources: Food from marginal land? ruminant can do!

- Livestock use 70% of agricultural land



This part can only be used by herbivorous

- Permanent grassland, marginal land
- Sown grasslland
- Crops for feed
- Crops for food

This part (globally 30% of cropping area but up to 50% in OECD countries) is questionable

This part might be used for crops production but it ensures the provision of ecosystems services

Mottet et al., 2018

Ten Years For Agroecology ***IDDRI***

- In Europe, permanent Grasslands and rangelands cover 73 M ha (40% Eu AA)
- Marginal land provide 25% of world animal products

Sere and Steinfeld, 1996

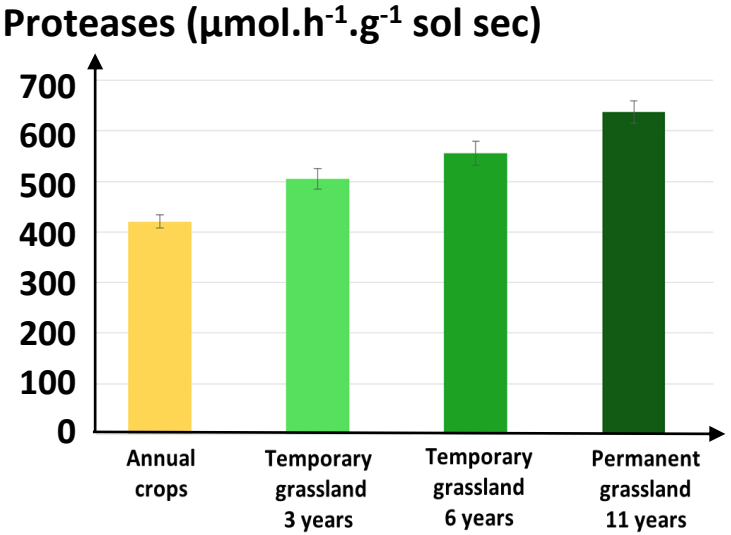
5. Livestock farming for more sustainable cropping systems and more fertile soils: some examples

- **Reduction of pesticides use**

- Crops receiving less pesticides
- Breaking of pest cycles by more diversified rotations

t/ha		
OM	30	70
Erosion (t OM/ha/y)	3.6	0.3
Invertebrates	0.5	3.5

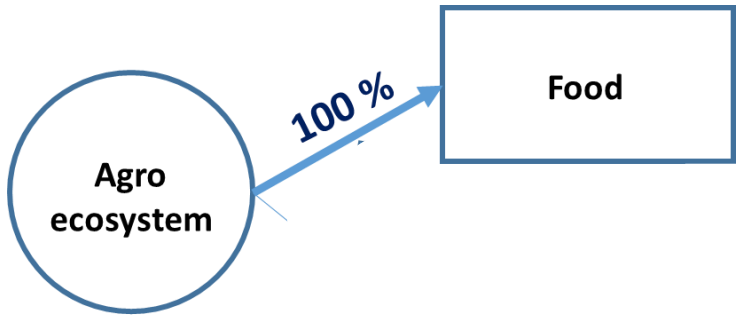
Eurostat, 2011



Petitjean et al., 2018

6. upgrading LCA to track progress

- **No consideration of the multi-functionality of agro-ecological systems**
  - **Critical aspect for long term sustainability are not considered**
  - **Give advantage to intensive farming system**



- **Provide a partly biased vision of resource used by livestock**
  - **No distinction between non-arable and arable land**
  - **No distinction between edible and non edible food used as feed**

Part 3

Conclusion

- **Think twice, develop a systemic thinking**
  - Move away from a simplistic plant vs animal opposition,
  - Do not step into a simple protein transitions
  - The shadow of livestock can be mitigated and counterbalanced,
  - Rethinking the interplay between crop and livestock sectors

- **Circularity provides a new ambition and new challenges for livestock**
  - Animals are recyclers by nature: conversion of biomass, production of nature based organic fertilizers,
  - They provide a range of societal goods and services.

- **The conditions of success**
  - Integrated solutions are needed,
  - Livestock systems must be transformed to fulfil their roles,
  - Diversity of livestock production systems is essential to fit various demand and local contexts,
  - Need to articulate local and global scales, production of food and production of immaterial functions,
  - Need to develop more accurate models to track progress, assess the multi-functionality of livestock agriculture.


Agro ecological
Livestock farming is
much more than only
food production

MATCH!

SMART COMBINATIONS AS THE WAY TO GO IN SOY GOVERNANCE

Heleen van den Hombergh
IUCN NL May 10-5-2021

A just world that values and conserves nature.

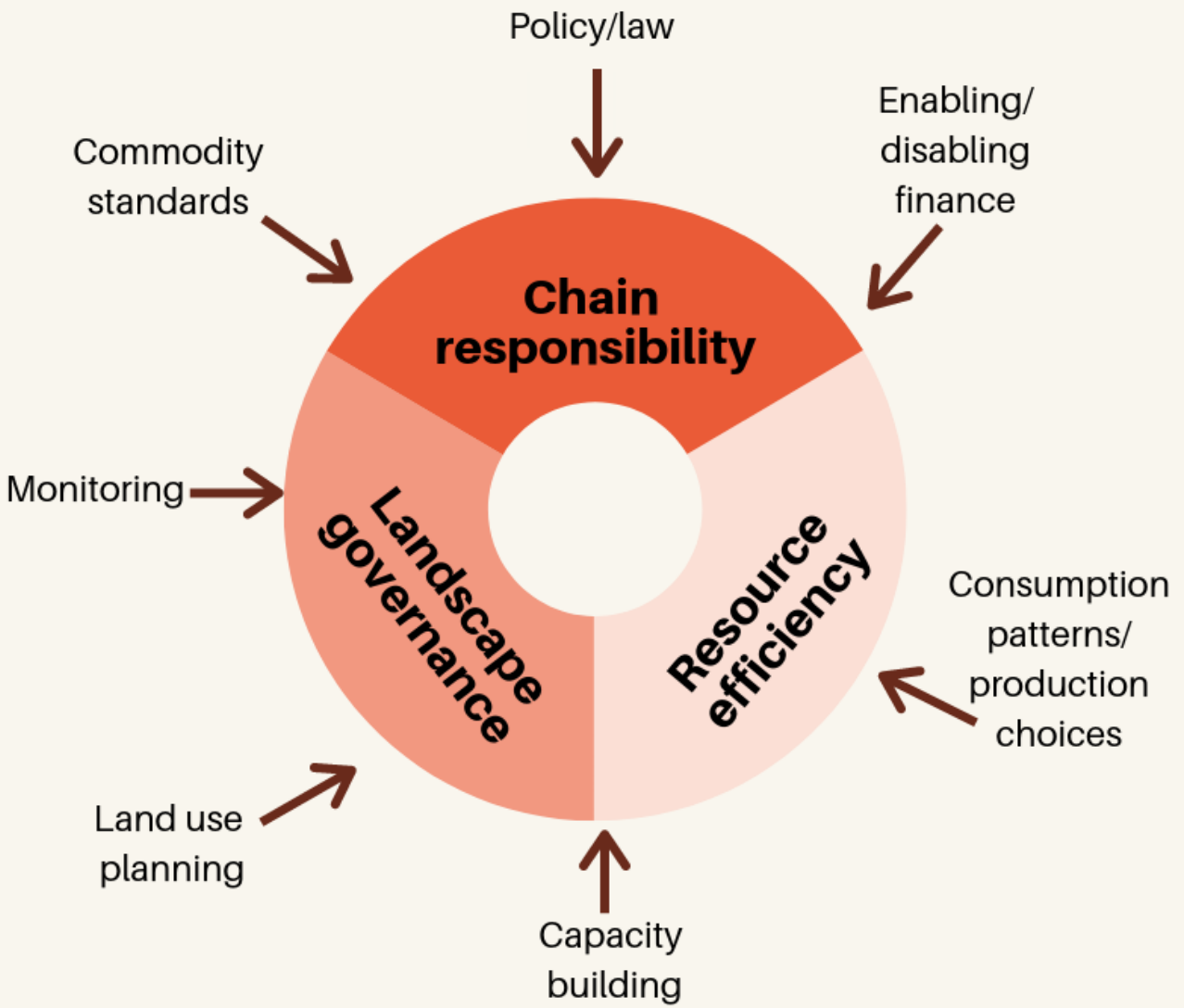
The challenge: making scale while assuring quality

In terms of production, but also in terms of sustainability efforts.

Dealing with the bulk with integrated standards.

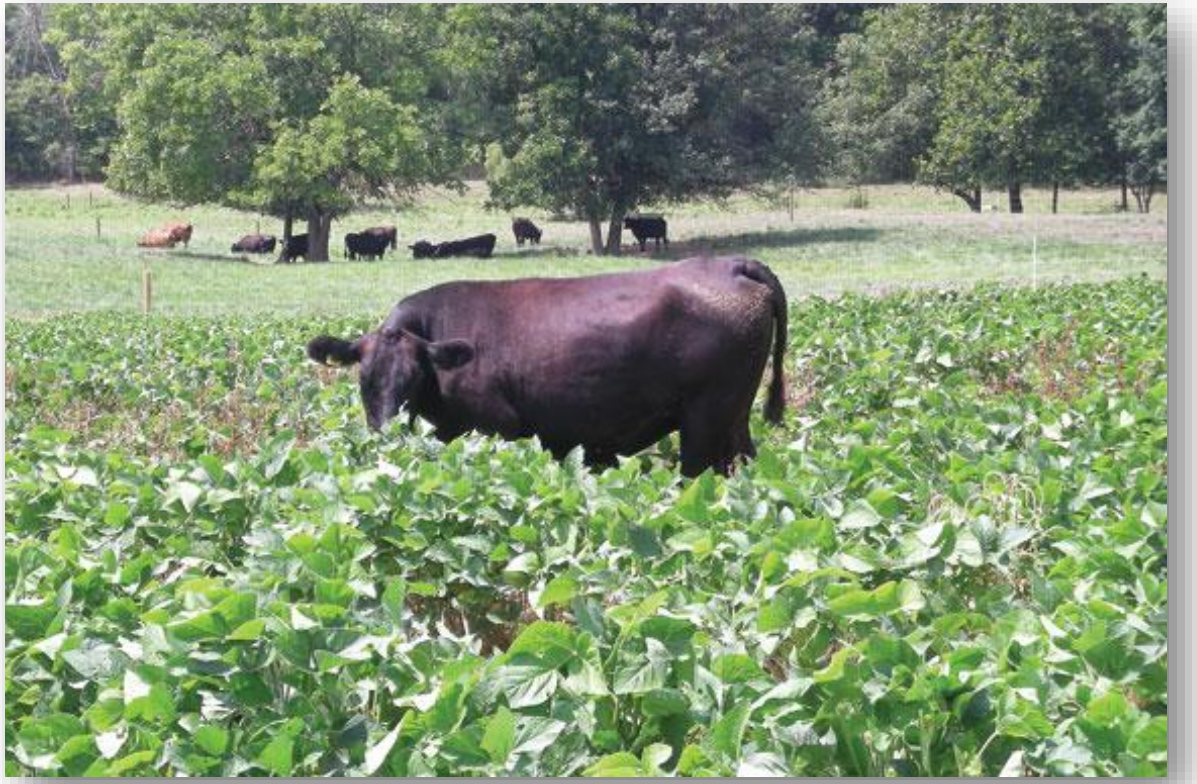
IUCN National Committee of The Netherlands

Overall vision on agro commodities



Challenges in resource efficiency

- **Feed efficiency:** efficient soy/feed use by livestock
- **Land use efficiency**: efficient soy/livestock production while protecting nature.



....more challenges in resource efficiency

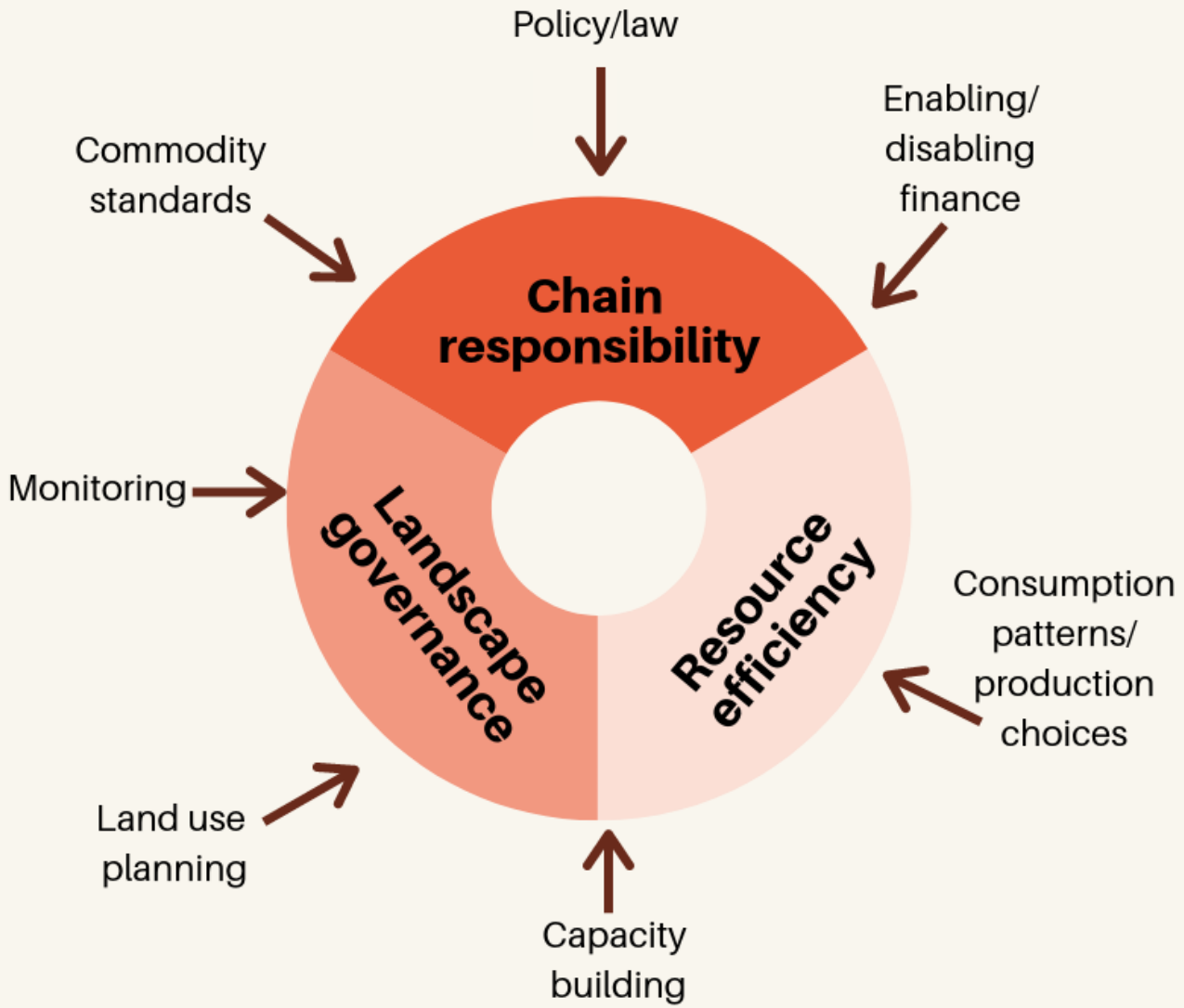
Protein efficiency: reducing protein consumption and protein transition towards a more balanced human diet. From 60:40 animal-plant protein to 50:50, 40:60

Challenges in chain responsibility

- *The Trend:* **Conversion free beyond certification:** making scale in total physical value chain with overall policies/regulation & monitoring technologies. (3 % worldwide, 19 % European soy use certified deforestation free)
- *but…build on what we've learnt*: **Certification/verification beyond conversion free:** application of quality environmental and social standards: broaden their application.

IUCN National Committee of The Netherlands

Overall vision on agro commodities

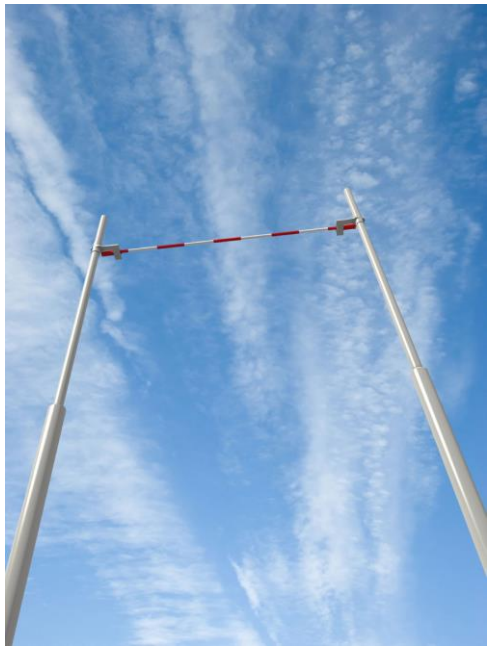


Challenges in landscape governance

- Taking *and keeping* farmers onboard- across a jurisdiction/cross- commodity
- Conservation and its connectivity: beyond isolated patches
- Government role in overall legal compliance
- Green finance
- And ….so many more

Set the bar, raise the floor

- Set the bar of value chain requirements, while raising the floor of production landscape governance.
- A collective search to really contribute to climate mitigation, conservation and social justice.



Dealing with public pressure

“Clean up your value chain!”

deforestation & conversion free

human rights due diligence

Or carbon footprint. Pressures come often in isolation.

Public pressures & legislation => sustainable solutions overall or…… steps back in quality criteria and abandonment of risk landscapes?

Strengthening the baby in the bathwater

Criteria and control: the role of integrated standards

- **Resource efficiency**? Still sustainable production is needed. MATCH!
- **Value chain responsibility**? Standards as examples and tools for control. Also in mandatory settings. And in physical supply chains. MATCH!
- **Landscape governance?** Standards as guidance for improvement and as proof for compliance: MATCH!

Collaborative Soy Initiative

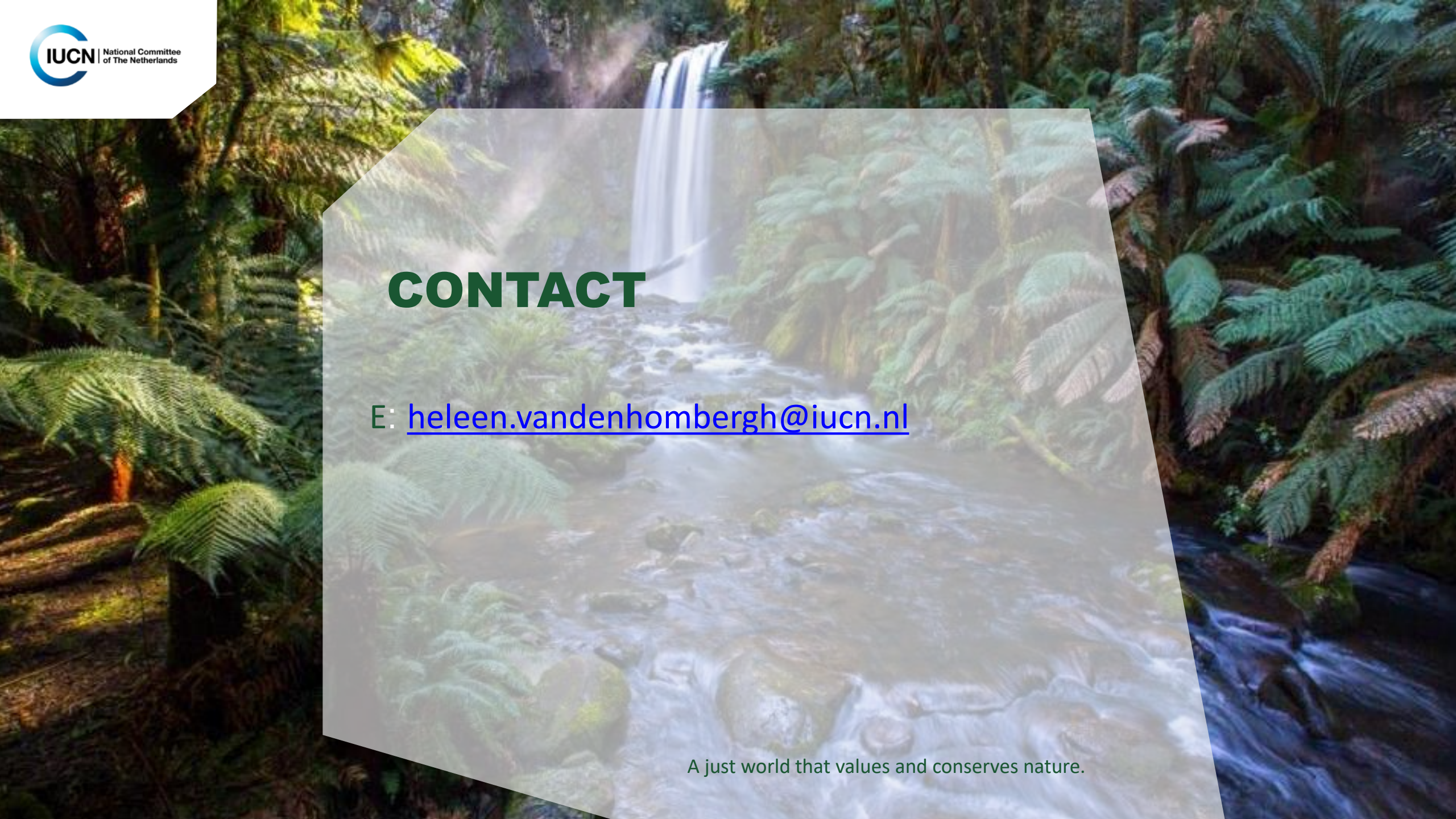
Matchmaking between insights, initiatives, tools.

“Meta meetings”, working groups,
webinars, info hub in development.

for example: June 2nd, with ProTerra”:
the volatility of soy and its effect on sustainability.

thecollaborativesoyinitiative.info

Collaborative
Soy
Initiative



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A just world that values and conserves nature.

Thank you for your participation!

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