

# What is the Safe Operating Space for EU Livestock?

@RISE\_Fnd  
#balancedlivestock



**Annabelle Williams**, RISE Foundation  
ATF special session at EAAP 2018, Dubrovnik 27/08/2018

# Context

- **RISE**
  - A public utility Foundation and Brussels based think tank
  - Aim: to provide an impartial and balanced contribution to ongoing policy debates on key agriculture- environmental issues in Europe with the aim of promoting a more sustainable and competitive European agriculture.
- **Why livestock**
  - Literature on livestock vs health, environment, climate, welfare
  - The tone is overwhelmingly critical; substantial adjustments suggested; understandable reaction from the sizable livestock ag & food sector

## Can we find a framework to engage constructive science based debate and action on the issue?

- **Our central idea is the need to rebalance livestock in the EU:**
  - For millenia crop & animal agriculture were balanced, low pressure
  - For 150 years: Popn. & Econ growth + technical change ⇒ imbalance
  - All expectations are the imbalance will grow – this is unsustainable

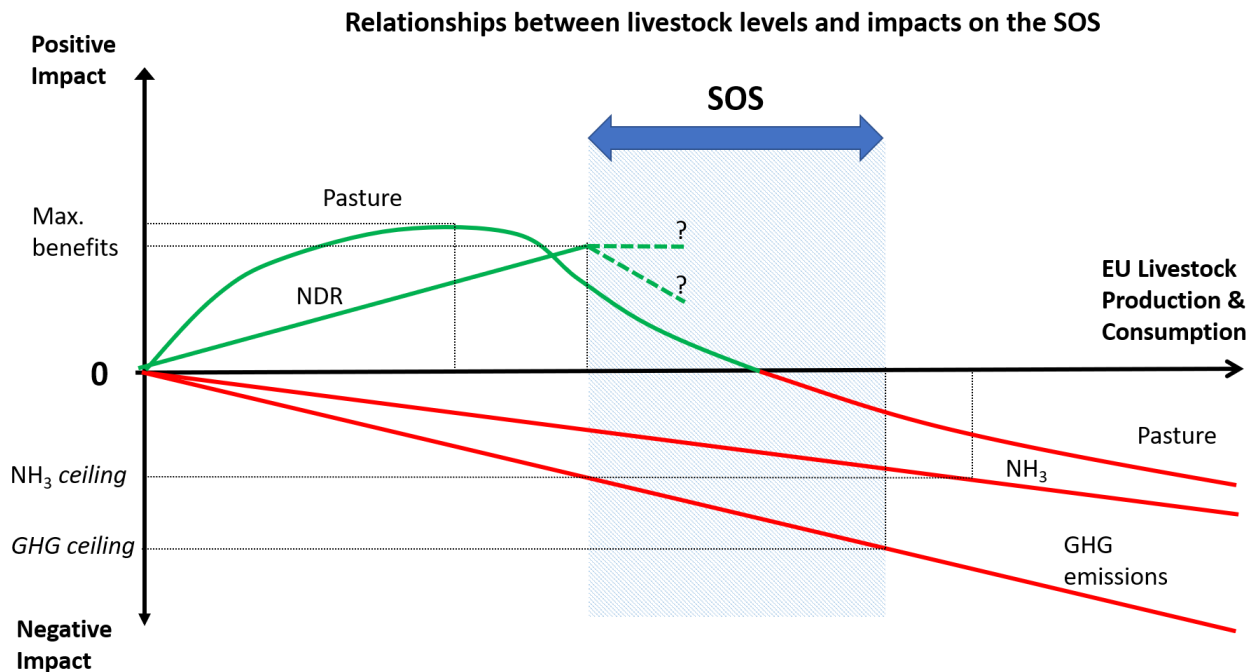
## Which led us to the question, where does the balance lie, and how can we move there?

# Benefits and negative impacts of livestock

	Benefit	Negative
1 Human nutrition and health	Hi quality nutrients	Overconsumption
2 Utilisation of pastures & by-products	Cultural landscape	Over-grazing
3 Culture and livelihoods	We enjoy it! Provides jobs	
4 Climate harm		GHG emissions
5 Nutrient cycles	Manure Agro-Eco	Water & air pollution
6 Biodiversity	HNV systems	Simplification & specialisation
7 Land use and soil degradation		Pressure for feed
8 AMR and Zoonoses		Dangers for human health
9 Animal welfare	Looking after animals	Treatment, housing, transport

# A safe operating space for EU livestock

- Planetary boundaries (Rockstrom 2009, Steffen 2015)
- De Vries (2013) suggests a SOS is a balance between human needs and adverse impacts & a social floor and an environmental ceiling

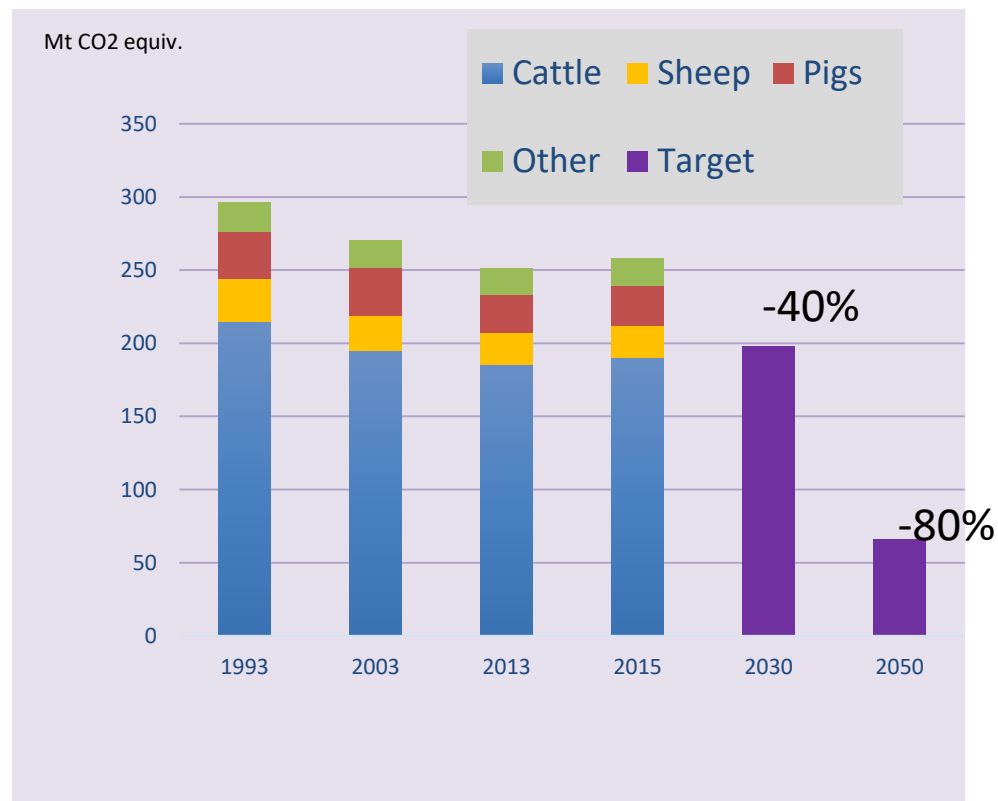


# Calculating a Safe Operating Space

- Lower Boundary for human nutrition (national dietary guidelines – averaged)
- Lower Boundary for permanent pasture utilisation (and the benefits this brings)
- Upper boundary for nutrient cycles (N)
- Upper boundary for climate protection

# Upper boundary for Climate protection

- Variable is GHG emissions from livestock
  - Direct, enteric fermentation & manure management
  - Indirect, approx 40% of crop emissions (not included here)
- Boundary defined by GHG reduction targets for 2030 & 2050



# Lessons on the idea of SOS

- Exploratory approach, early days, but it is a useful concept in which to frame a scientific debate about the future scale and make up of the sector.
- The appropriate scale and spatial resolution for SOS boundaries is tricky: more work on biodiversity, soils, AMR and animal welfare
- Strictly, none of the positive contributions are absolutes. The lower boundaries reflect long-standing cultural preferences.
- EU livestock production & consumption are not in a SOS. Major exceedances of upper boundaries for GHG & nutrient flows, reductions of the order of 60% are indicated.

# Options for moving into SOS

## 1. Reduce negative impacts of livestock production; old agenda

- Resource efficiency: feed, water, animal health and welfare
- Manure management, processing and reuse
- Reducing density and concentration of livestock
- Large scope for innovation in: breeding, nutrition, housing, pollution, waste capture & reuse

## 2. Shift and reduce consumption of livestock products

- Changing the species balance of consumption
- Substituting alternative animal protein: insect, algal, cultured
- Changing diets to less protein and plant based protein

**The indications are that route 1 is not sufficient alone.  
Acting on current consumption is unavoidable**



# Change is inevitable

- Growing consumer awareness + calls for governments to react + the EU's obligations to meet its targets under the international agreements → **change in the sector is inevitable.**
- **If change is to be positive, it must be embraced and planned.**
- **The livestock sector should not be under attack.** Society should recognise livestock producers as partners for change; the overwhelming majority of whom have acted and invested in the evolution of the sector in good faith.
- Policy makers → to recognise that change will be needed in the sector and take a strategic long term approach to planning the transition.
- **Public funds should be allocated to support the sector through the necessary the transition** including making resources available to help businesses with stranded assets to adjust.
- We envisage a **transition over 2 to 3 decades!**

# Recommendations

- The EU needs to take action by setting up a formal inquiry to investigate the livestock issue and better measure the boundaries:
  - Where is the safe operating space for EU livestock
  - What adjustments in production and consumption are necessary to get to it
  - What would be the impacts on health, environment and economy of these changes.

# Thank you!



The report will be released on September 13th in Brussels. A digital copy will be made available from:

[www.risefoundation.eu/publications](http://www.risefoundation.eu/publications)

[rise@risefoundation.eu](mailto:rise@risefoundation.eu)

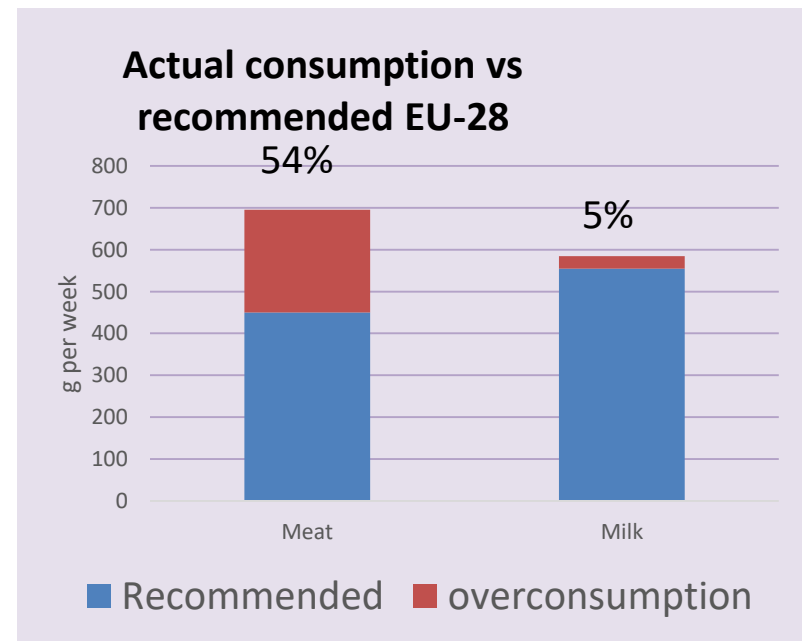
@RISE\_Fnd

#balancedlivestock

# Lower boundary for nutrition

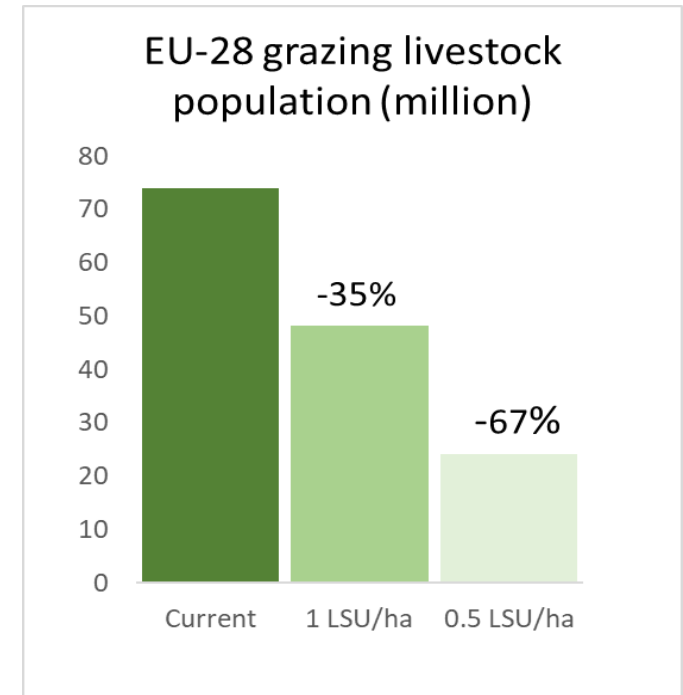
- Aim: to capture the idea that livestock products provide high quality nutrition for human development and life.
- Difference between actual and recommended consumption (National Dietary Guidelines – EU averaged).

Group of animal products	Recommendations averaged for EU-28
Meat	450 g per week
Milk and milk products	555 g per day
Eggs	3 eggs per week

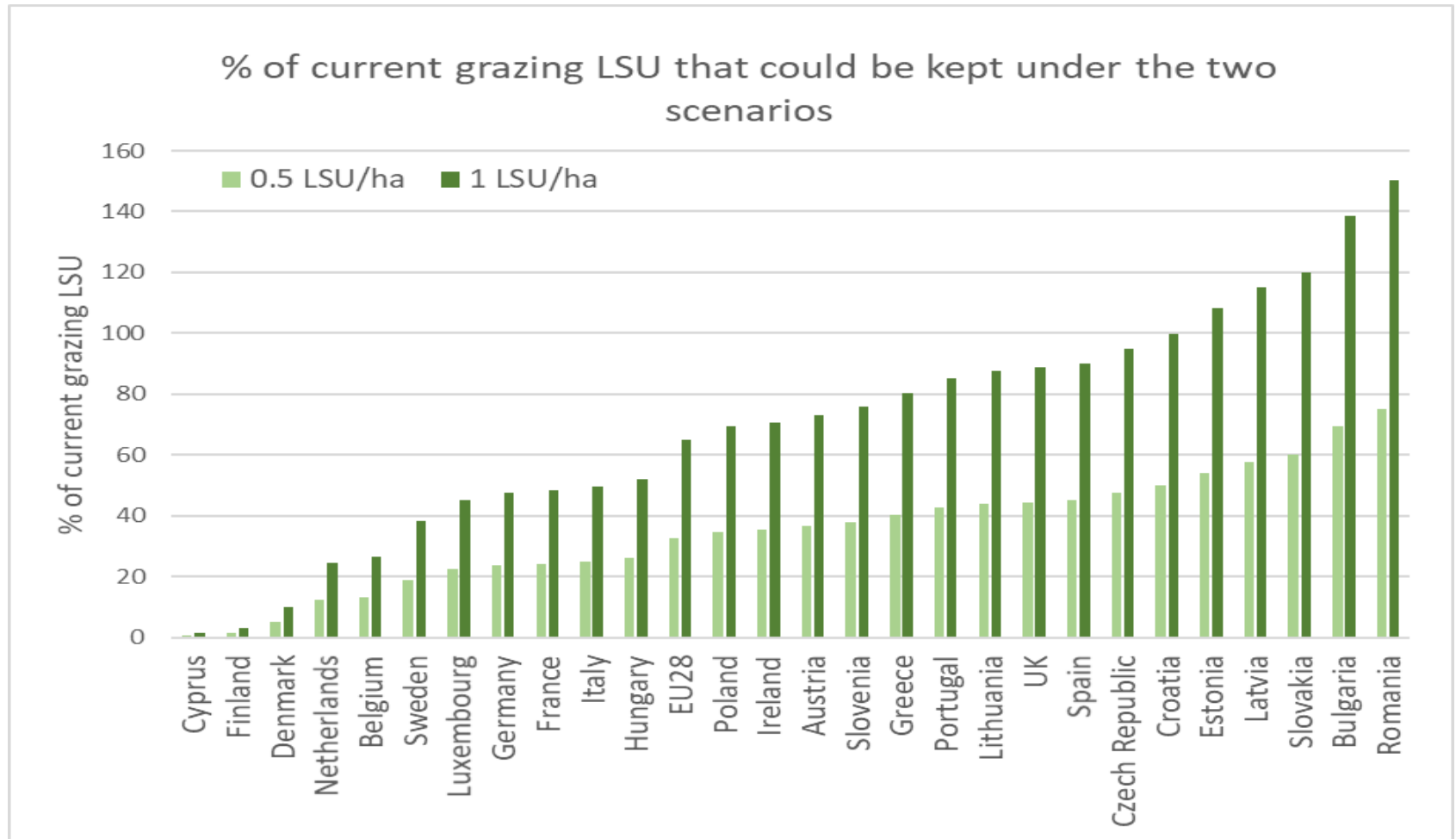


# Lower boundary for pasture utilisation

- Boundary definition: minimum number of grazing livestock needed to ensure the conservation of permanent pastures in the EU and the associated benefits.
- Data on: current grazing LSU (excl. horses), areas under permanent grassland and rough grazing. Two stocking rates are taken: 1 LSU/ha and 0,5 LSU/ha.



# Percentage of grazing livestock units which could be kept to utilise permanent grasslands, EU and MS, 2 stocking rate assumptions.



# Upper boundary for Nutrient cycles (N)

- Identified as an upper boundary due to the serious effects of water pollution, leading to eutrophication of terrestrial and marine ecosystems.
- Variable measured is N fixation: manufactured fertiliser + biological fixation.
- The upper boundary for N fixation follows Rockstrom, Steffen and Kahiluto expressed per head of population.
- Will be covered in more detail in the final report
- Current calculation indicate that the EU exceeds the boundary by 65%\*