

Sustainable Agriculture

**“Climate-neutral dairy farming in Latvia” –
Opportunities and challenges for dairy farmers!**

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We live milk



Sustainability is a concept with a tremendous transformative potential

Dairy Commitment to Sustainability

The dairy industry has a long-standing commitment to healthy people, a healthy planet and healthy communities. This commitment is also one held by the global dairy sector, which helps create resilient and sustainable food systems to ensure high-quality nutrition for people around the world.

DAIRY AS A DRIVER OF THE SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals (SDGs) – launched by the United Nations in 2015 – are a transformative declaration to improve all lives around the world, while also fostering environmental stewardship. **The SDGs recognize the interconnected dimensions of sustainable development: Economic, Social and Environmental.¹**

Accentuated value chain drivers

Global Farming
challenges



Tension in the
Business environment



Technology shift
in Dairy farming



Climate effect on
dairy



Agenda and discussion

Climate-neutral dairy farming in Latvia

1. Efficient milk production secures food safety and availability
2. Milk production, efficiency and the relationship to sustainability
3. Global landscape and sustainability standards

... Opportunities and challenges for dairy farmers in Latvia

- In the structure of agriculture production in the Baltic countries, milk production is the most important sector among animal farming sectors.
- Improvement of genetic quality of cows and herd management have resulted in annual increase in the average milk yield per lactation, thus the total milk yield is also increasing
- 11,812 farm holdings in Latvia produce 980,000 tons of milk per year, according to data from the Ministry of Agriculture (ZM)
- Although the number of dairy farms has fallen by 27% over five years, the volume of milk purchased has decreased by only 2.1% in Latvia
- About 60% of the production in the sector is exported to Lithuania, Germany and Estonia, +
- 30 processing companies is also an advantage.

So what do we see around the world?

Sustainability in changing the way we talk about business and the future



1. Efficient milk production secures food safety and availability

By 2050 the world's population is predicted to reach 9.4+ billion, requiring +70% food availability.

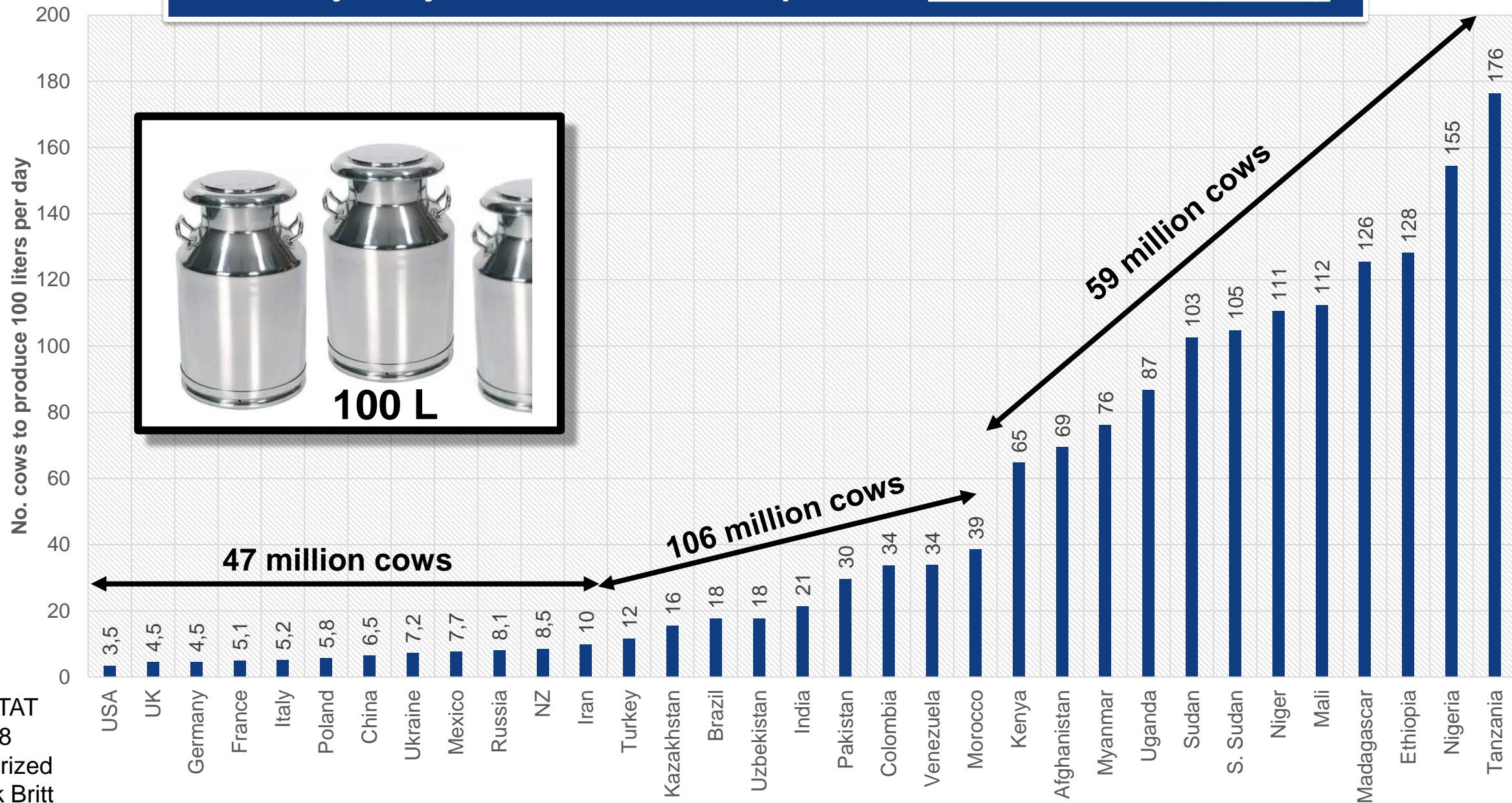




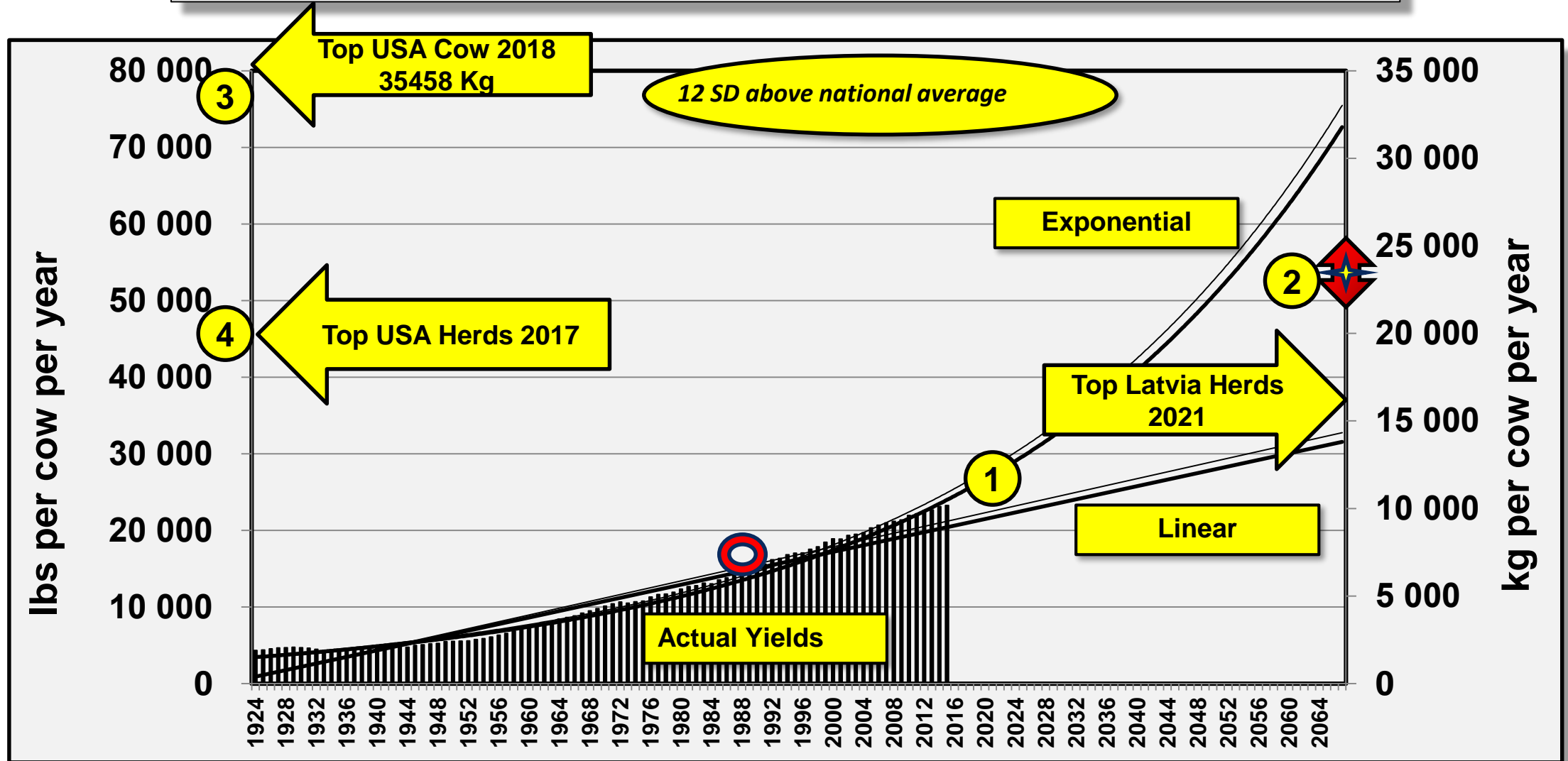
2. Cows and milk yield do not overlap.



How many dairy cows are needed to produce 100 liters of milk per day?



Experts' forecast of milk yield in USA in 2067 - 25.000 Kg/Cow/Year



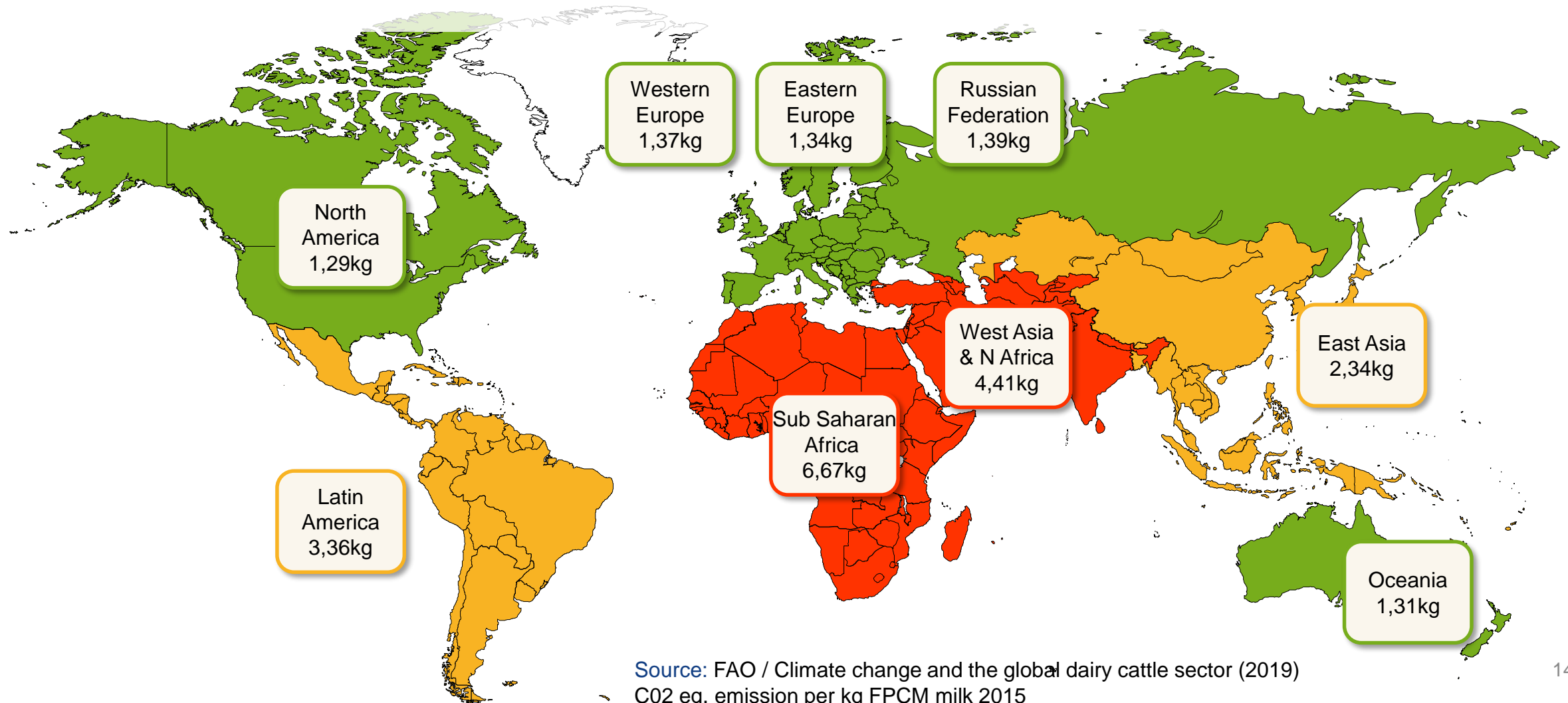
3. Global landscape intensifies as companies, countries, NGOs and others weigh in on sustainability standards

- Anti-animal and plant-based Movements
- Dairy processors and retailers prioritize sustainability in their supply chains
- Countries including UK, NZ, France, Denmark & Sweden are commit to carbon neutral
- Quality and environment management systems enforcement -mandatory and voluntary and the trends of implementation of the international management standards (ISO 9001, ISO 22000;HACCP DS 3027:2002; ISO 14001)



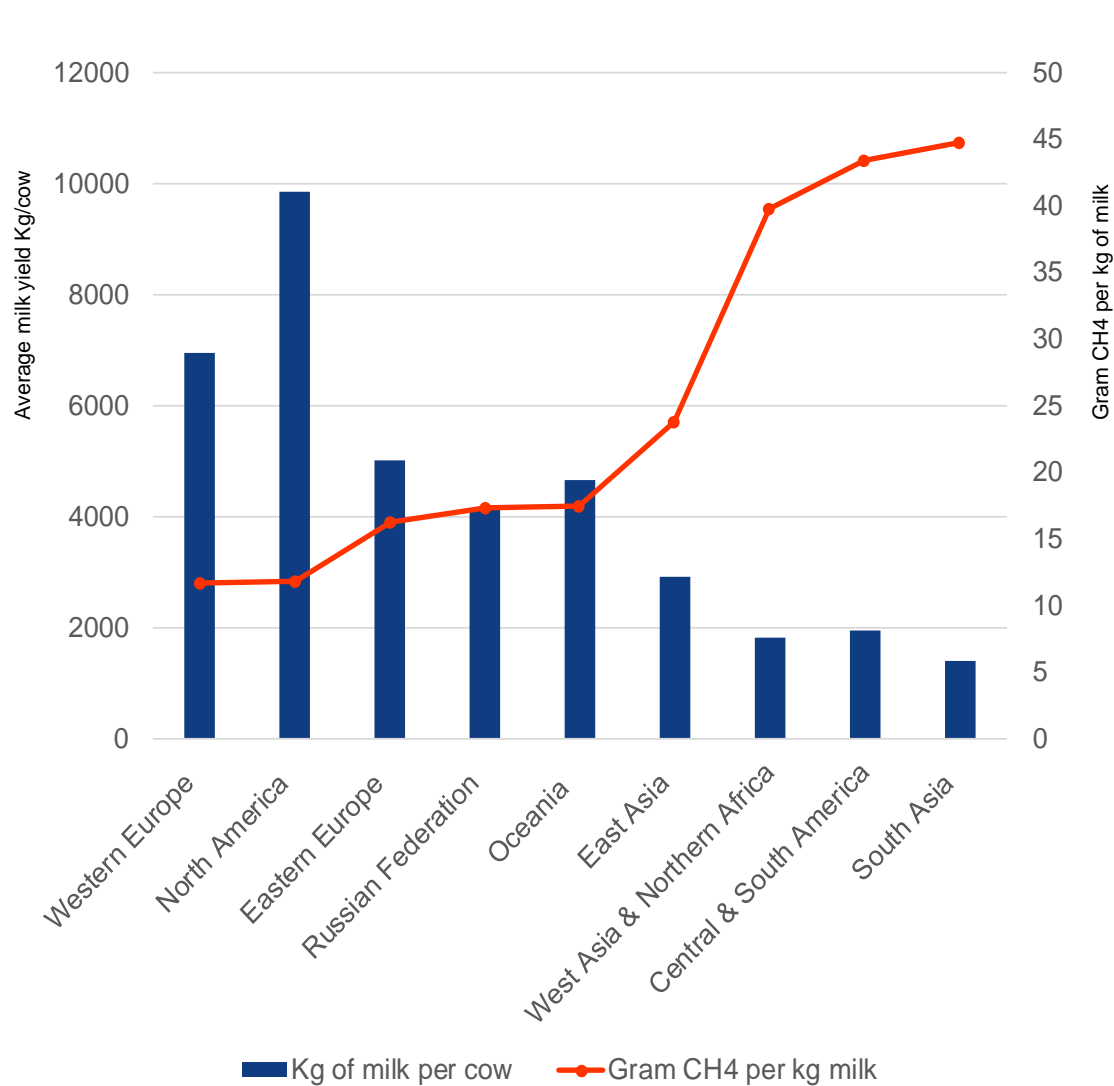
CO2 eq. emissions per kg of milk

Key to reduce emissions is to mechanize and modernize milk production

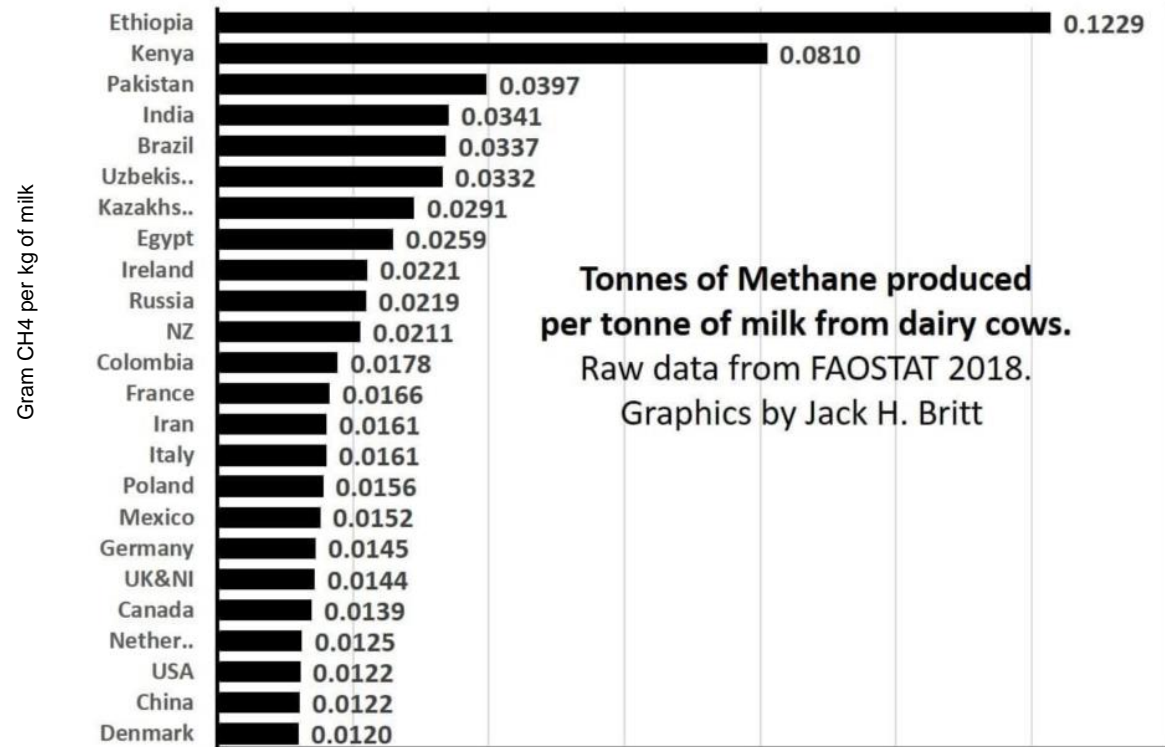


Source: FAO / Climate change and the global dairy cattle sector (2019)
CO2 eq. emission per kg FPCM milk 2015

Clear correlation between high milk yield and low emission of CH₄



Sub Saharan Africa is not shown (of chart numbers 101gram CH₄ per kg milk)



Tonnes of Methane produced per tonne of milk from dairy cows.
Raw data from FAOSTAT 2018.
Graphics by Jack H. Britt



Source: FAO / Climate change and the global dairy cattle sector (2019)

Characterising dairy globally

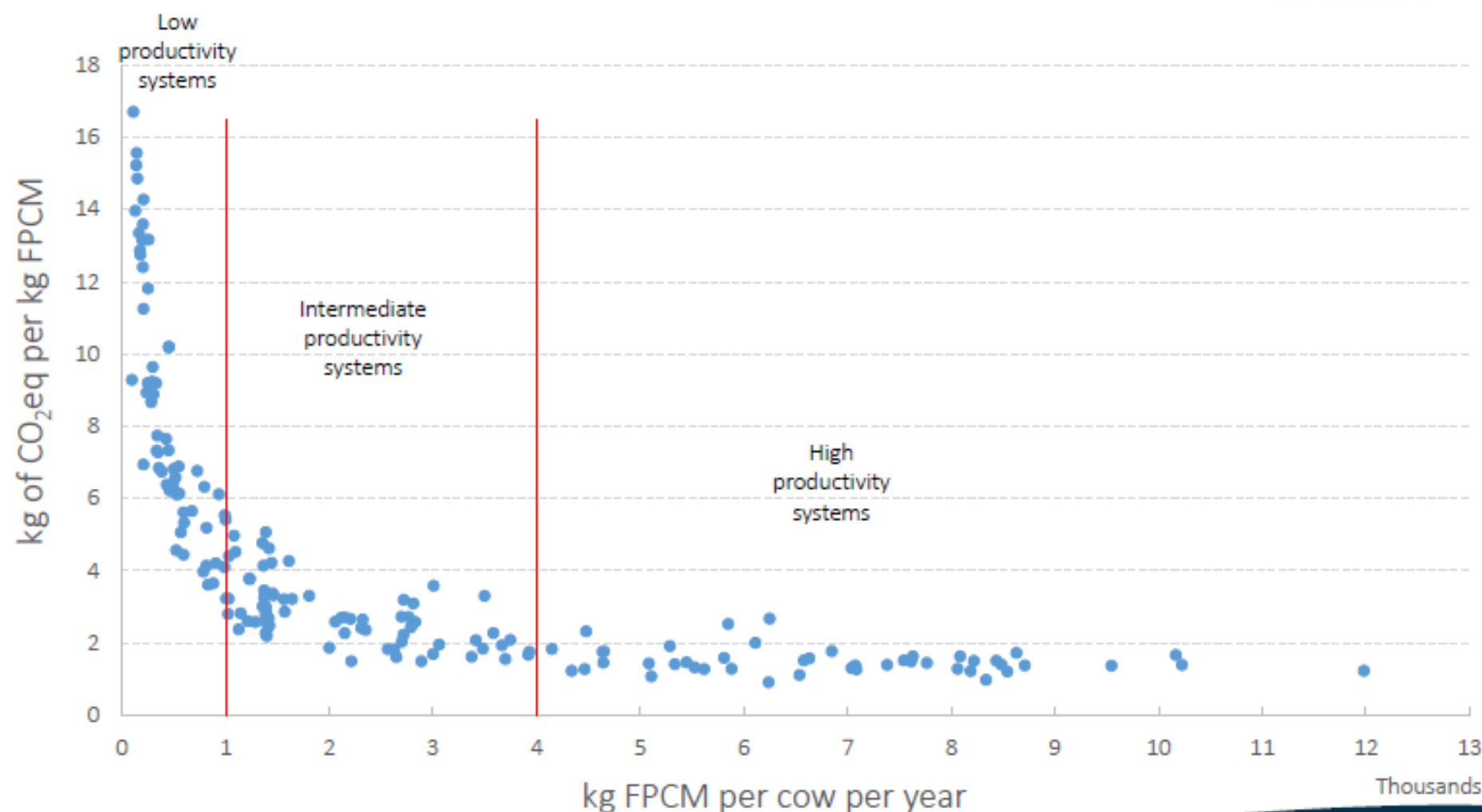
PATHWAYS
TO DAIRY
NET ZERO.

Observations:

- gradient of market orientation
- system performance strongly influenced by underlying agroecology
- overlap between performance of different systems

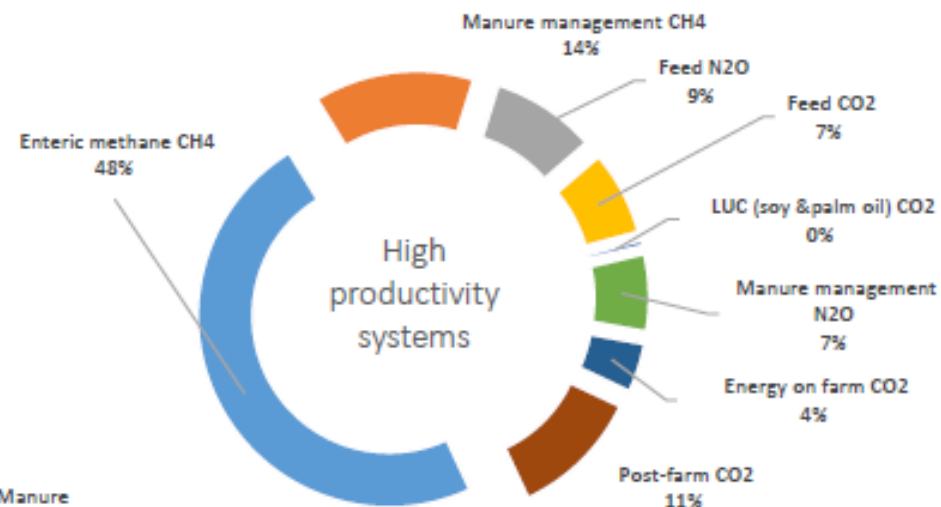
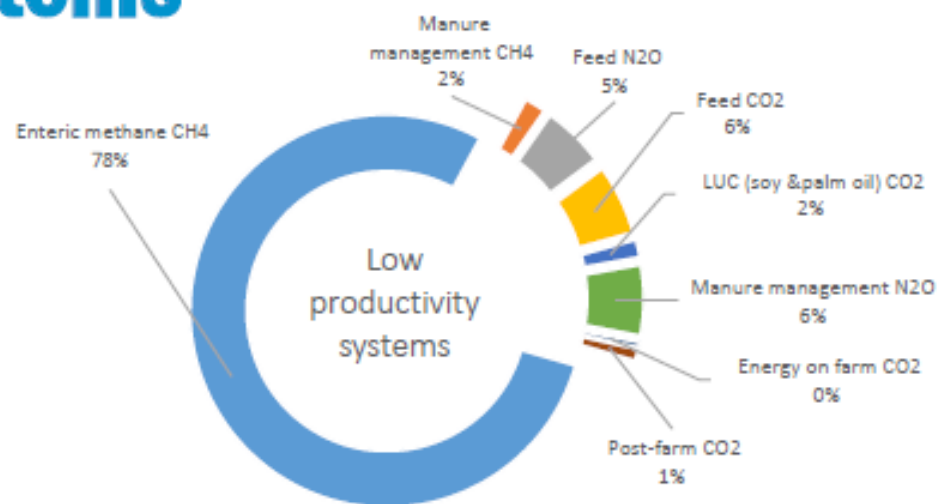
Important!

- each point on chart represents a country average, within which exist numerous different systems



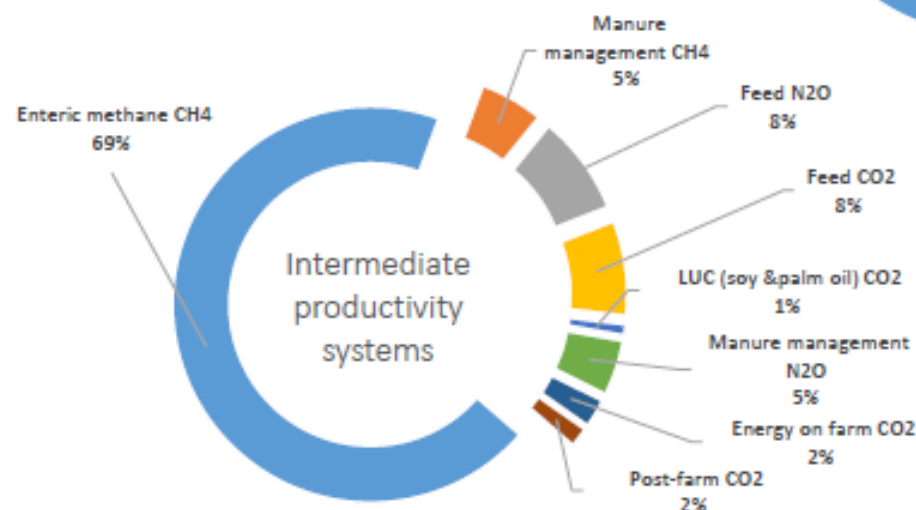
Comparing proportion of emissions sources between systems

PATHWAYS
TO DAIRY
NET ZERO.



Observations:

- enteric fermentation strongly influenced by system type
- more CO₂ in higher productivity systems
- more manure CH₄ in higher productivity systems



Article

Environmental Impacts of Milking Cows in Latvia
Janis Brizga 1,* , Sirpa Kurppa 2 and Hannele Heusala. 2021

- Through feed management and choosing more productive breeds, the dairy industry in Latvia have managed to significantly increase their milk yields and thus, also improve the environmental performance on certain environmental impact categories of production.
- The research results demonstrate that dairy system intensification generally provides a significant decrease in all of the impact categories assessed, when measured per kg of raw milk.

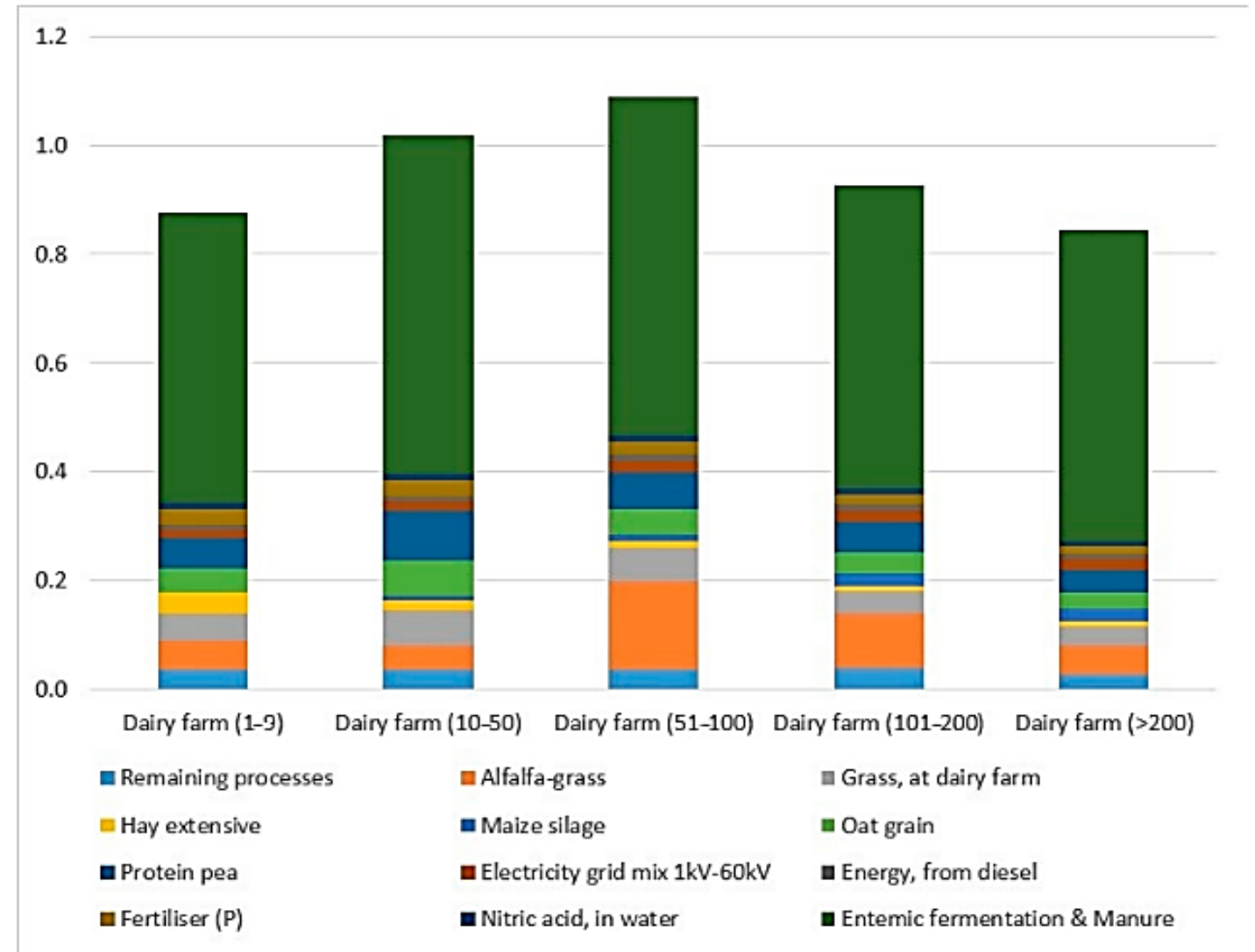


Figure 1. Global warming potential (t CO_{2e}/t milk) for different dairy systems in Latvia.

U.S. DAIRY'S ENVIRONMENTAL FOOTPRINT

A summary of findings, 2008-2012

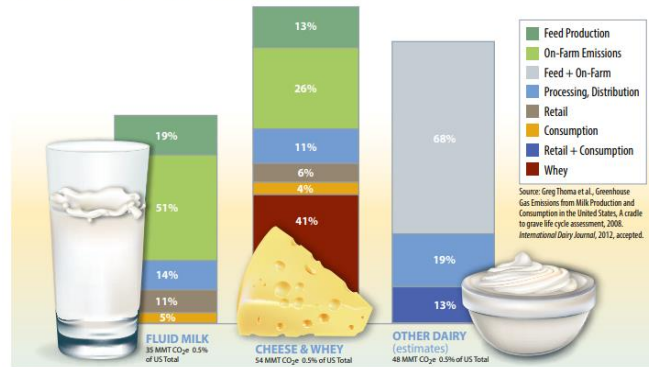
Life Cycle Management



Assess
Manage
Improve

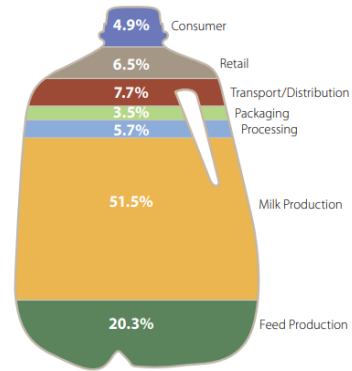
U.S. Dairy Carbon Footprint—All Products

Total emissions = 137 MMT (The entire dairy industry—farm to manufacturer's gate—contributes approximately 2% of total U.S. GHG emissions)



Thoma [et al. (2012). Comprehensive Life Cycle Assessment for Cheese and Whey Products - Final Report.

U.S. Fluid Milk Carbon Footprint



Greenhouse Gas Emissions for U.S. Fluid Milk: Contribution by Supply Chain

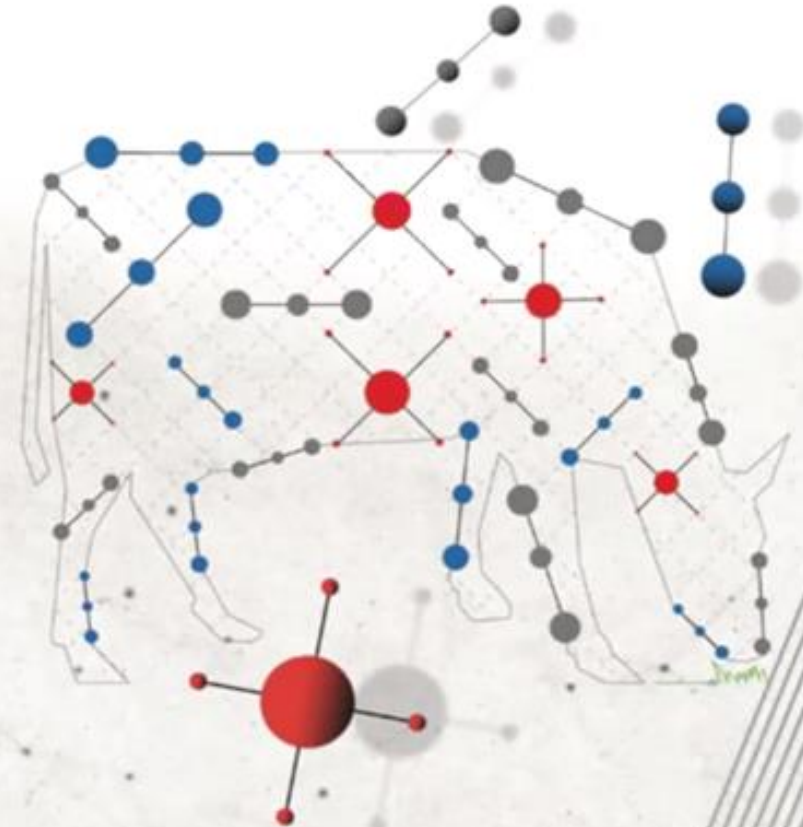
Life cycle emissions of fluid milk = 1.5 lbs. per gallon of milk¹
1.5 kg CO₂e/kg milk consumed)



Food and Agriculture
Organization of the
United Nations



Five practical actions towards low-carbon livestock

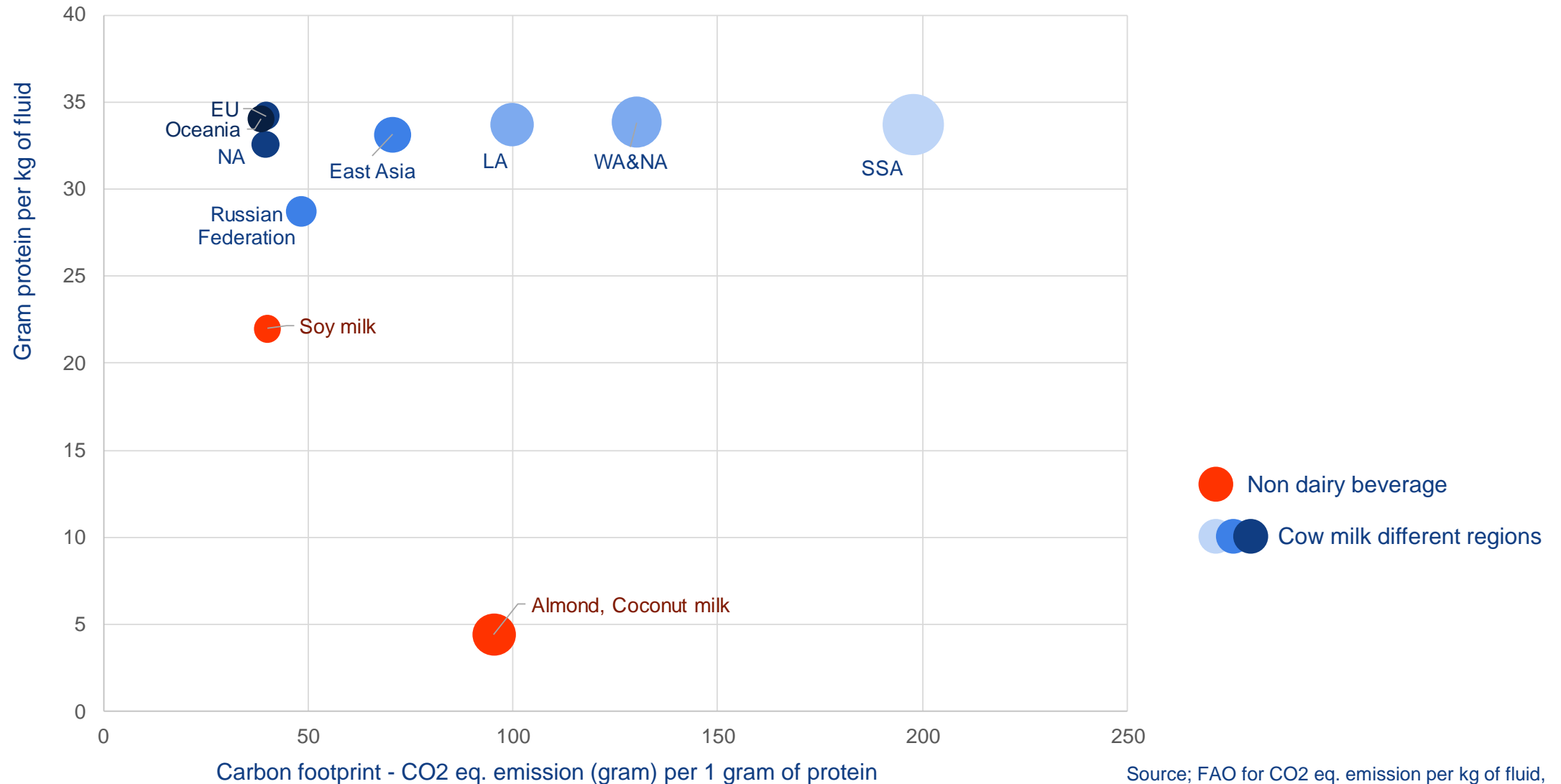


Plant based drinks growing – one side of the story

Increasing number of brands and self space at retailers



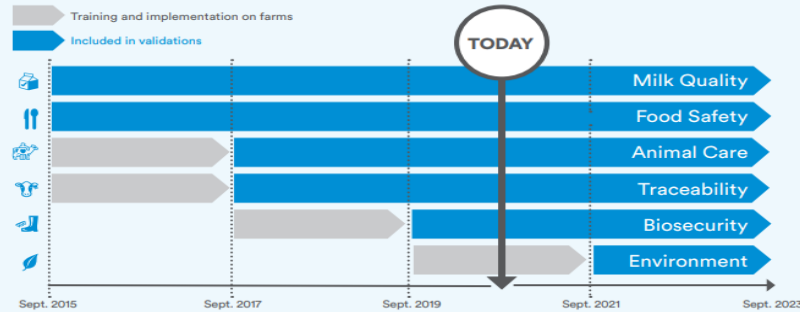
Cow milk from developed dairy markets have significantly lower carbon footprint per gram of protein than RNG drinks



Local to Global Sustainability Leadership Connectivity

proAction

Module implementation schedule



November 2020

Stewardship Commitment | Metrics at a Glance



FIELD		
Priority	Indicator	Metric
Feed Impact	Field to Market® indicators for water, soil, land use and biodiversity	• The Innovation Center for U.S. Dairy® (Innovation Center) continues to work with Field to Market to ensure the indicators and metrics are useful and relevant to dairy.
	Innovation Center indicators for greenhouse gas (GHG) and energy intensity	• U.S. dairy's Comprehensive LCA for U.S. Milk is used to measure the GHG and energy intensity of feed production. These metrics mirror those used at the dairy farm and are reported in aggregate.
DAIRY FARM		
Priority	Indicator	Metric
Energy Use	Energy intensity	• Total energy use (converted to MMBTU)/lb. of milk (FPCM)
GHG Emissions	GHG intensity	• Total GHG emissions (tonnes CO ₂ e)/lb. of milk (FPCM)
Water Quantity	Water use (on-farm)	• Gallons of water withdrawn (for lactating cows)/lb. of milk (FPCM)
Nutrient Management	Nutrient Management Plan	• Do you implement and maintain a written Nutrient Management Plan? (Y/N)
Animal Care	Farm animal care	• Do you participate in the FARM Animal Care program? (Y/N)



Dairy Sustainability Framework

GHG Emissions	IDF standard life cycle methodology
Soil Nutrients	Implementation of a Nutrient Management Plan to enhance production and reduce water and air pollution
Soil Quality	Soil quality is maintained or improved by good practices defined in a Soil Quality Management Plan.
Water Availability & Quality	1. Effluent Management Plan adopted to minimise impacts on water quality; 2. Water use efficiency for production and processing is measured
Biodiversity	A biodiversity plan is implemented to preserve, restore and improve biodiversity on-farm and across the supply chain
Working Conditions	A Farm/Facility Safety Plan is implemented to ensure worker safety
Animal Care	Somatic Cell Count (SCC) is measured to monitor animal health
Waste	Farm level: implementation of a Waste Management Plan Processor level: mass of waste to landfill per year
Market Development	Process in place to inform producers of market development opportunities and challenges
Rural Economies	Total annual payments made to farmers for milk
Product Safety & quality	1. Does the organisation have a product safety & quality recall plan? 2. How many public product recalls during the reporting period?

SUSTAINABLE DEVELOPMENT GOALS



Based on the customer's main challenges and our own materiality index, we have identified 10 key areas of priority



Each priority area is driven by a member of our Group Management. In 2020, the owners of each priority area created working groups and have started to set goals.



DeLaval
sustainability
model



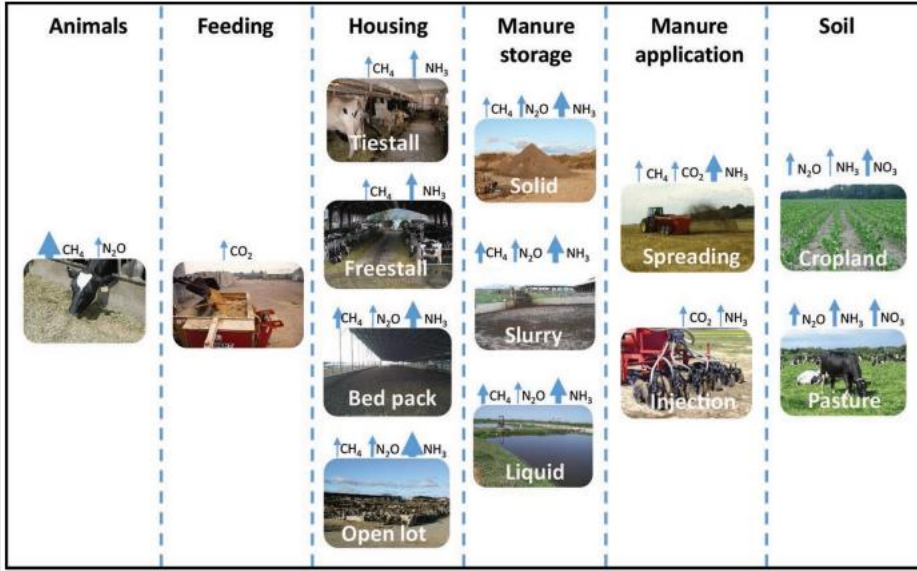
DeLaval actively involved around the subject of sustainability



Are we Connecting Across the Supply Chain?

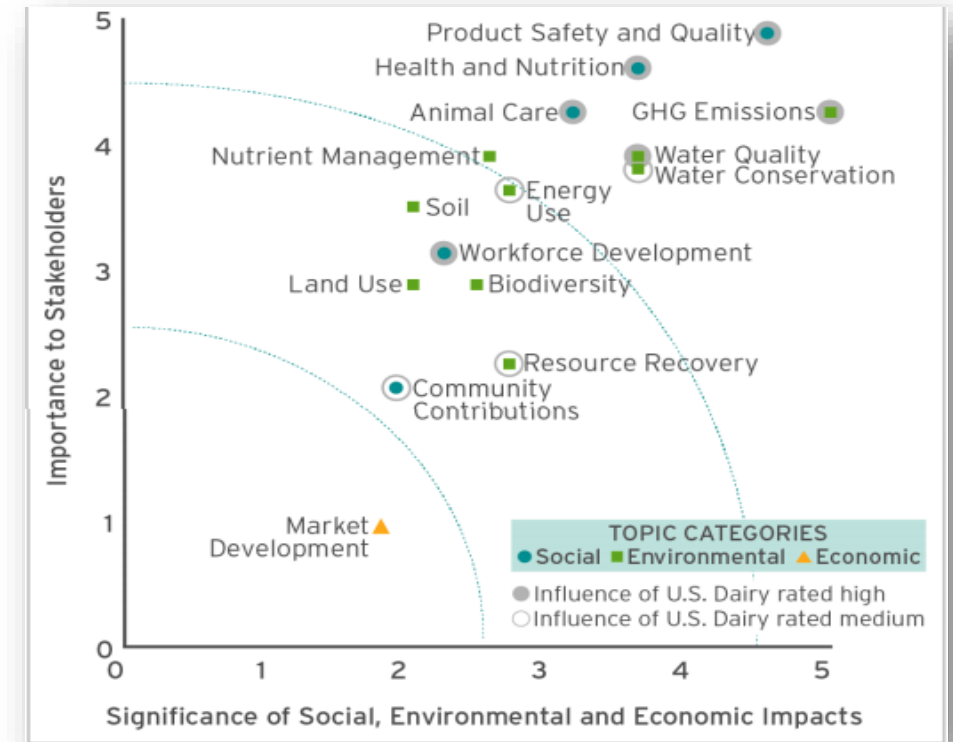
Are we cohesive and how do we measure this correctly?

Farm goals



Technology and knowledge transfer

Industry and processing goals



Think of strategies

What are we going to do? Is 2050 an appropriate target?

Current strategies

- New tech
- Biogas digesters
- Feed supplementation
- Regenerative agriculture
- Low carbon fuel standards
- Governmental grants and programs

Future strategies

- Energy and carbon credits
- PES & stock trading (water and biome markets)
- Nutrient markets
- Circular economies
- Public and private partnerships connecting ag production and waste reduction
- ETC

Sustainability and carbon neutrality

Is it possible? Who is responsible & should we take the lead?

- Sustainability and carbon neutrality creates a path forward to millions of people. It is good for the farm, people and environment
 - But first, we need to understand all farm systems and the variation across regions
- We need to understand how are we measuring and agree on those measurements or KPIs
- Economic impact of CO₂ pricing can become strong, both ways...
- License to operate!







We make
sustainable
food production
possible