11. WHFF Methane Emissions presented by Martino Cassandro

09th September 2024

World Holstein Friesian Federation

WHFF

Global Methane Hub

The first coordinated approach to methane mitigation funding, focussing on the energy, agricultural, and waste sectors which account for 96% of human-caused methane emissions.

The Global Methane Hub will contribute to reducing global methane emissions 35% by 2030 and 50% by 2050, on a baseline of 2010 levels.

Raise prominence of methane

Accelerate methane policy at the global level to support and accelerate national action

Steer public and private finance towards methane mitigation

Tracking emissions with greater transparency and access to data

ENTERIC FERMENTATION R&D ACCELERATOR

The largest-ever, globally coordinated public-good investment in breakthrough research tackling livestock methane emissions.

SCIENCE OVERSIGHT COMMITTEE

Independent, distinguished, multidisciplinary


Dr. Robert Banks


Dr. Karen Beauchemin


Dr. Margaret Gill


Dr. Sinead Leahy


Dr. Rolf Thauer


Dr. Paul Wood

ENTERIC FERMENTATION R&D ACCELERATOR
HOW WE'RE APPROACHING IT

01 — **Establishing the "state of the science" and identifying gaps**

02 — **Undertaking an assessment of the current research landscape and associated research infrastructure**

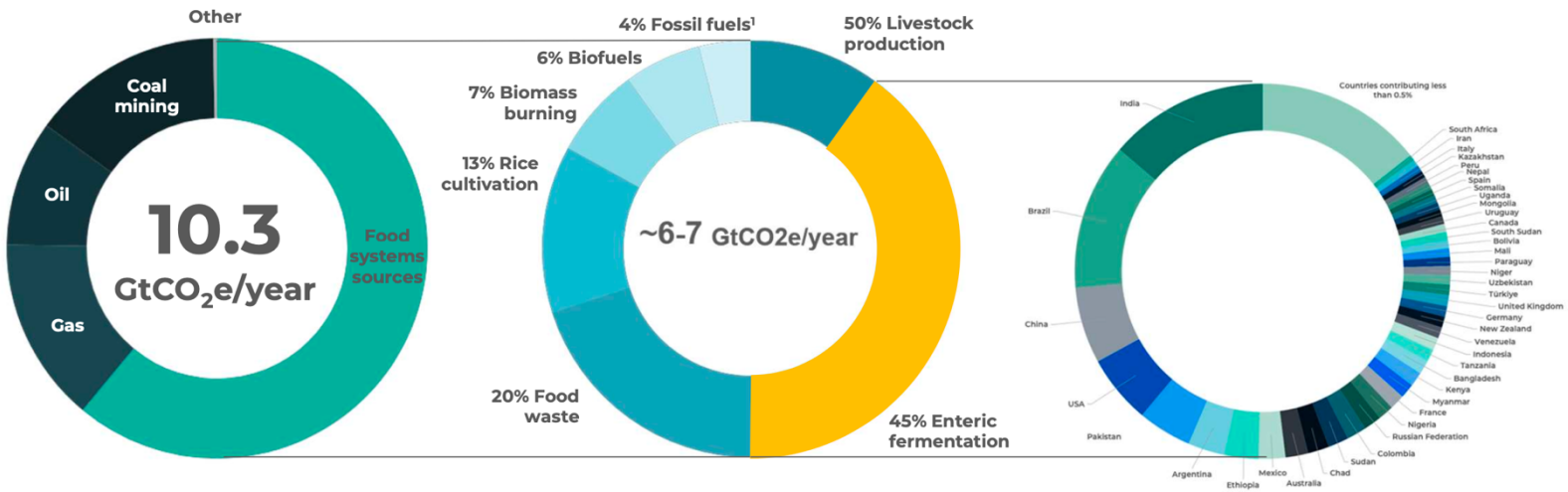
03 — **Identifying and articulating short- and medium-term research outputs**

What would constitute accelerated progress?

04 — **Designing a research strategy that is fit for purpose**

How do we get where we want to be as quickly and cost-effectively as possible?

ENTERIC METHANE CONTRIBUTION TO GLOBAL AND FOOD SYSTEM METHANE

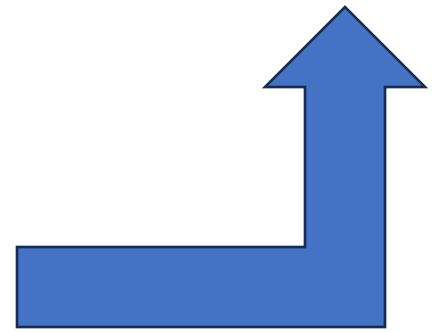


Global anthropogenic methane emissions (2017)[1]

Food system methane emissions

Proportions of enteric methane emissions

It's a crowd-sourced exercise, guided by our Science Oversight Committee



[1]*Saunois et. al 2020: Total anthropogenic emissions are based on estimates of a full anthropogenic inventory and not on the sum of the "agriculture and waste", "fossil fuels", and "biofuel and biomass burning" categories due to methodology of adding different inventories. IPCC AR6 WGIII (2022). Available at: https://www.ipcc.ch/report/ar6/*

[2]*Hegarty RS, Cortez Passetti RA, Dittmer KM, Wang Y, Shelton S, Emmet-Booth J, Wollenberg E, McAllister T, Leahy S, Beauchemin K, Gurwick N. 2021. An evaluation of emerging feed additives to reduce methane emissions from livestock. Edition 1. A report coordinated by Climate Change, Agriculture and Food Security (CCAFS) and the New Zealand Agricultural Greenhouse Gas Research Centre (NZAGRC) initiative of the Global Research Alliance (GRA).*

Protocols & network building

Data & phenotyping

Implementation: genetic evaluation & breeding program

Research & Phenotyping proposals

1) Working Groups

- WG1: Dairy global North
- WG2: Small ruminants
- WG3: Beef global North +
- WG4: Asia
- WG5: Africa
- WG6: South America
- WG7: Buffalo & ruminants

2) Database

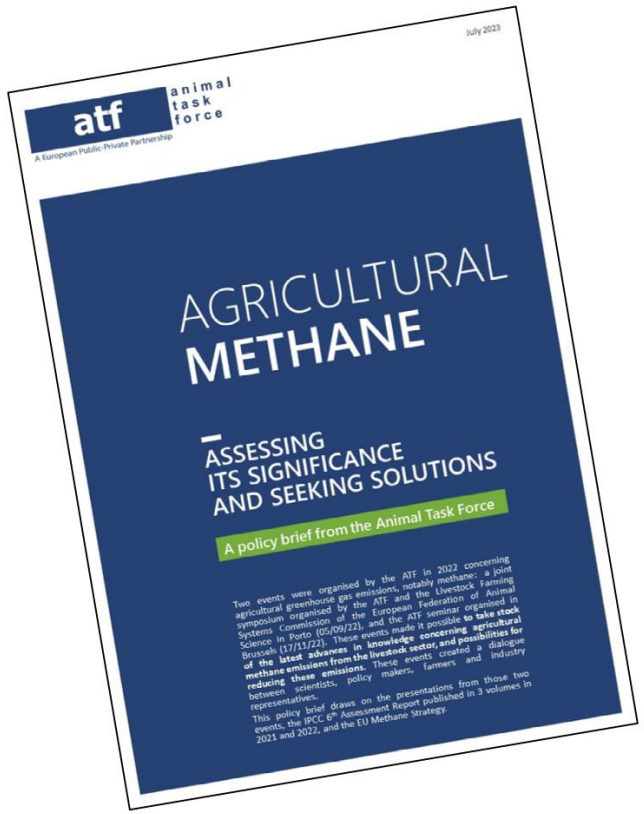
- legal
- technical
- organisation

3) Animal breeding research

Proposals under development (20 May 2024):

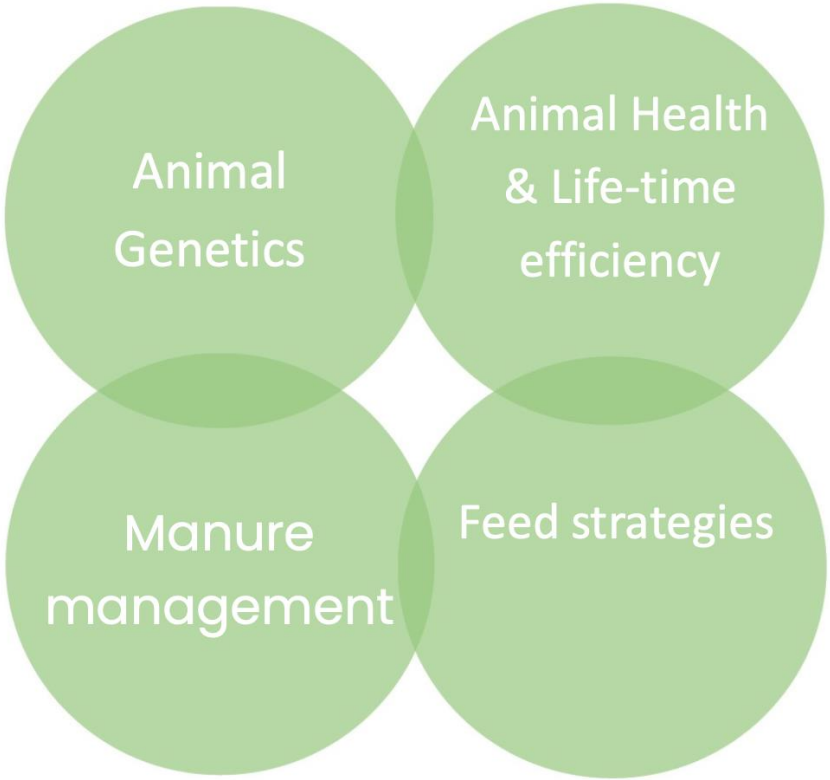
Area	#Proposals	Countries/region involved	Target #animals	$ (when known)
Beef	3 (AUS; USA; Canada)	Aust., NZ, US, UK, Brazil, Ireland; US; Canada	28,000;10,000;?	10m;3m
Sheep	1 (AUS)	Aust., NZ., UK, Uruguay, Ireland	22,000	4.5m
Dairy	5 (J, Hol, Red, Brown, Holstein)	Denmark, NL; Italy ; Denmark, Italy, Canada; Austria, Germany and Switzerland; Poland;	20,000;?;?;?;?;?	0.5m; 0.5m ;1.5m;1.5m;3m
Region	4 (Africa, Latin America, Asia (2), Ethiopia)	4 countries Africa; UY, Arg, MX, BR; India, US; CH, Jap, India,; Ethiopia/NZ	?;14,000;?;?;?; 3000	6m;4.9m;?;?;0.5 m
Other	Impact analysis; Microbiome (SP, NL, NZ, AUS, DN, Africa eo); sniffer QA/protocols.			0.12; 2m;0.5m

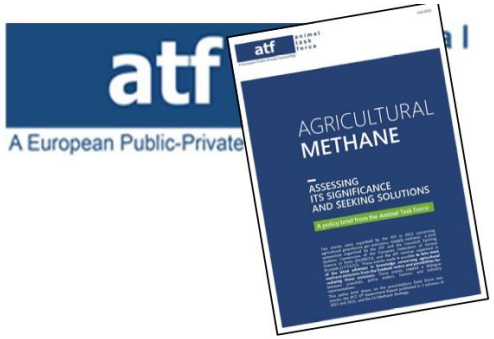
ATF Mission: delivering knowledge and expertise



- **Methane from energy should be tackled first** – can be cut the quickest and with least cost (EU Methane Strategy)
- Minimising **biodegradable waste** going into landfill should be a priority
- Agricultural emissions should be **reduced as much as possible**, but some methane emissions from livestock are unavoidable (unique ability to convert fibre to food)

Mitigation tools





RECOMMENDATIONS :

- Need of **appropriate target** for Agri CH4 (Policy level)
- Communicate; **we can we deliver results** (Breeders and farmers level)
- Developing and deploying methane **mitigation tools** needs correct support on Research and Innovation (Policy, breeders and farmers)

Take home messages

- **Appropiate target for CH_4**

- **Animal genetics** is an important mitigation tool for reducing it, as part of **balanced and responsible breeding**

- Animal genetics is cumulative and permanent

- **Need to join forces on:**

Communication **Research** **Implementation**

What do we do?

Providing input for EU research and innovation agendas

Members (Research & private sector)

Engaging in dialogue on sector innovation with key stakeholders in EU

EU authorities NGOs and stakeholders

Enhancing cooperation in EU research & innovation

Enabling knowledge exchange and act as a source of expertise

2022 :*Livestock emissions and the COP26 targets*

Explore the topic through One-day symposium at EAAP (in collaboration with LFS Study Commission)

- the role of methane
- the different metrics to measure emissions
- mitigation levers at various scales

Disseminate the knowledge to policy makers and stakeholders in Brussels (Nov 2022)

- Decision-making with impacts on the livestock sector
- Tools to mitigate
- How to implement them

Why does CO_2 need to get to net zero while methane doesn't?

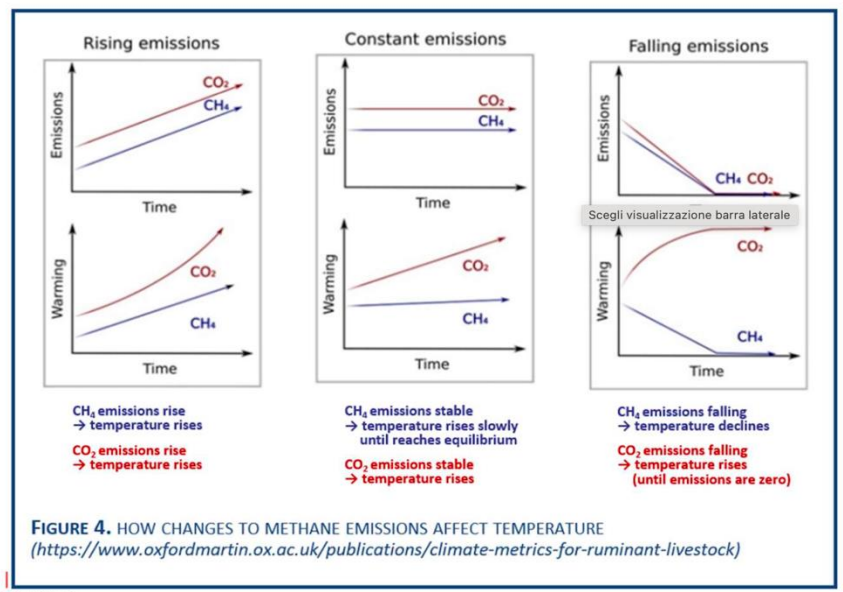


FIGURE 4. HOW CHANGES TO METHANE EMISSIONS AFFECT TEMPERATURE
(https://www.oxfordmartin.ox.ac.uk/publications/climate-metrics-for-ruminant-livestock)

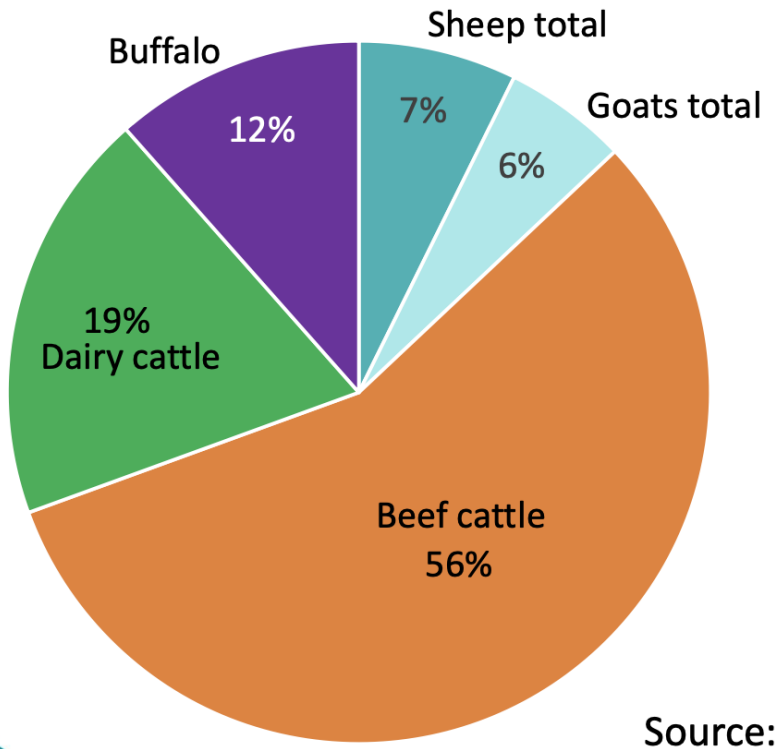
Methane has a short half life whereas CO_2 remains in the atmosphere for a very long time

If methane emissions fall by 3% per decade, its impact on warming is roughly constant

2021 FAO Livestock e-Methane (kt)

- Total enteric methane emissions from **5 major livestock species** was 97,384 (kt) in 2021.

Species	Enteric Methane Emissions (kt)
Beef cattle	54,973
Dairy cattle	18,550
Buffalo	11,217
Sheep	7,088
Goats	5,556

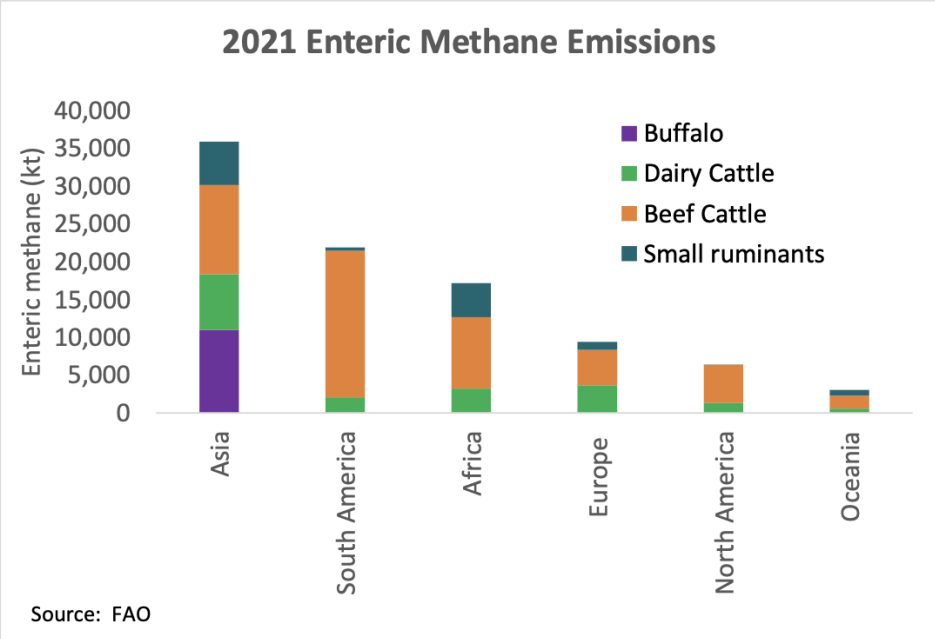


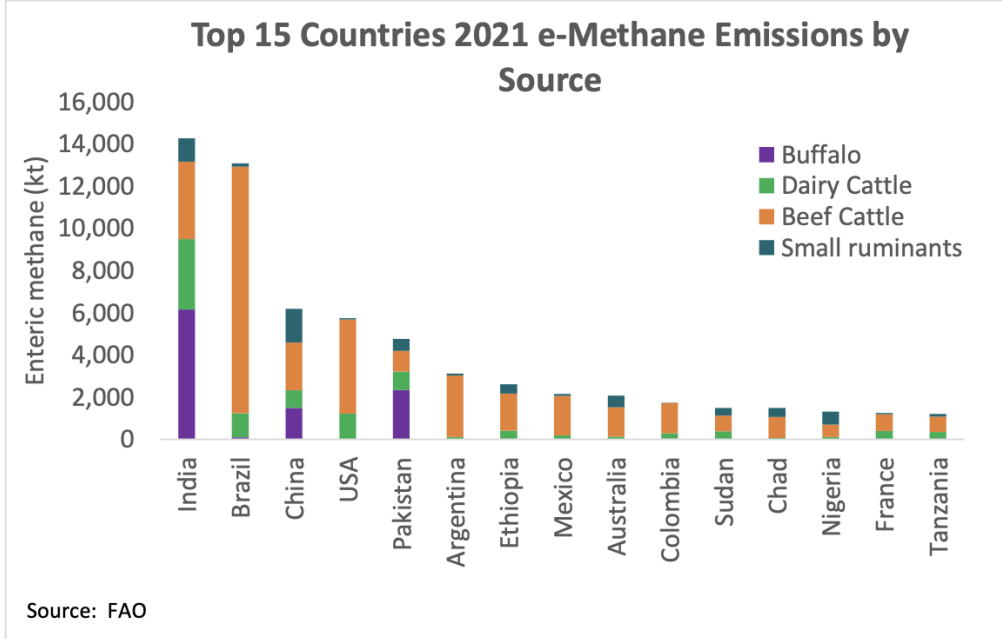
Source: FAO

abacusbio.

Livestock e-Methane by Livestock Class

- Buffalo e-methane emissions: **Asia** 98% (India 55%, Pakistan 21%, China 13%).
- Dairy cattle e-methane emissions: **Asia** 40%, (Europe 20%, Africa 17%, South America 11%).
- Beef cattle e-methane emissions: **South America** 35%, (Asia 21%, Africa 17%, North America 9%).
- Small ruminants e-methane emissions: **Asia** 45% (China 35%, India 24%, Pakistan 12%) and **Africa** 36%.





Animal Segment Emissions Clusters

0.800–1.000 (very high)
0.700–0.799 (high)
0.550–0.699 (medium)
0.350–0.549 (low)
Data unavailable

World map

representing Human Development Index categories (based on 2019 data, published in 2020)

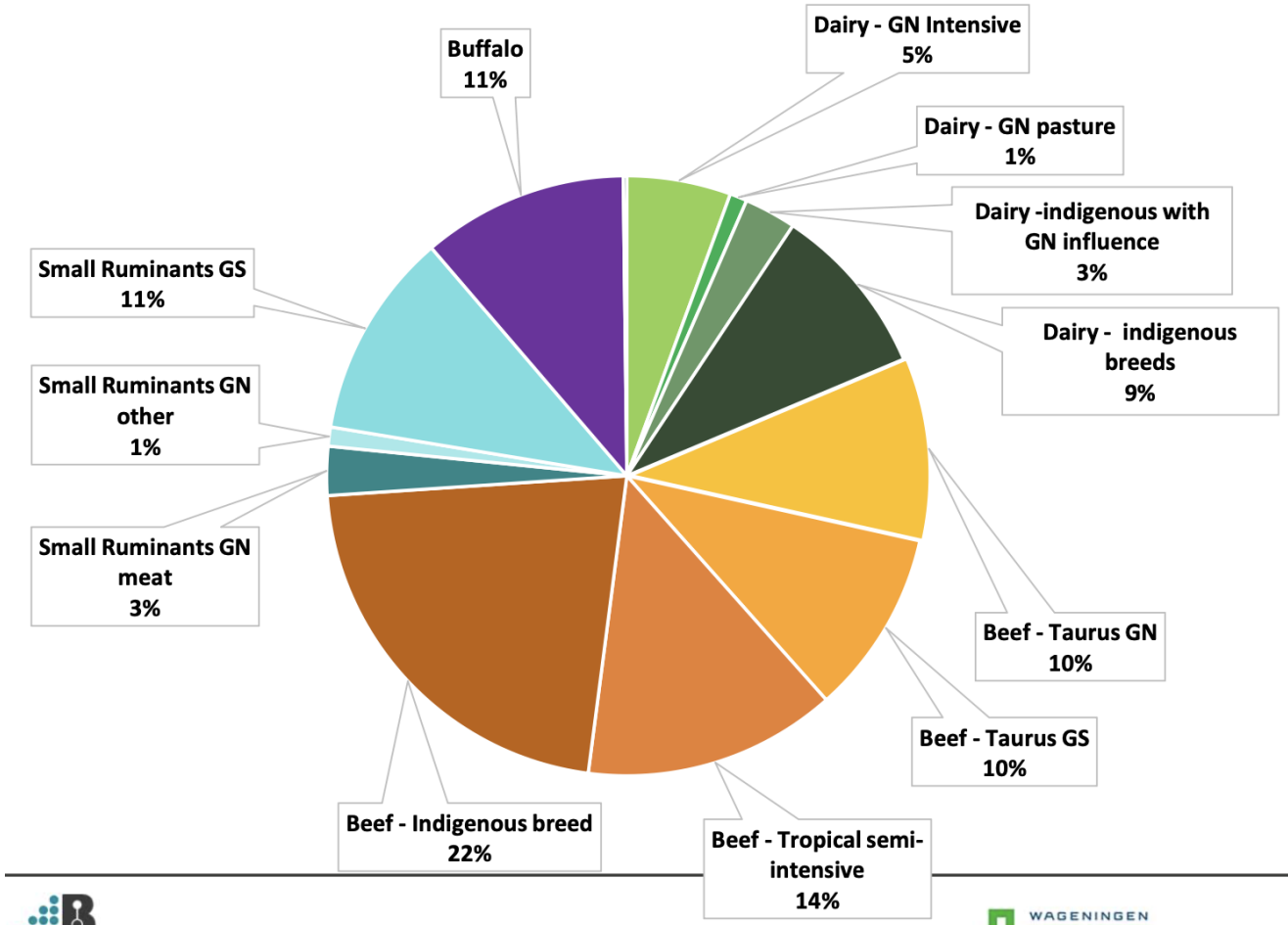
The terms "Global North" and "Global South" are not strictly

	Cluster	Description
1	Dairy GN Intensive	Intensive, Holstein-dominated dairy systems in GN
2	Dairy GN Pastoral	Intensive, Holstein and crossbred pastoral dairy systems in GN
3	Dairy GS with GN Influence	GS systems with crossbred herds influenced by GN genetics
4	Dairy GS	GS systems incorporating a diverse range of indigenous breeds
5	Buffalo	Buffalo (milk & meat) predominately in GS
6	Beef Taurus GN	Intensive beef systems based on *Bos taurus* breeds in GN
7	Beef Taurus GS	Intensive and semi intensive beef systems based on *Bos taurus* breeds in GS
8	Beef Tropical semi-intensive	*Bos indicus* and tropical *Bos taurus* breeds managed in semi intensive systems in both GN and GS
9	Beef Indigenous	GS systems incorporating a diverse range of indigenous breeds
10	Small Ruminants GN meat	Intensive lamb and dual purpose systems in GN
11	Small ruminants GN other	Fibre and milking small ruminant systems in GN
12	Small ruminants GS	GS systems incorporating a diverse range of indigenous breeds

GN = Global North - Northern America and Europe, Israel, Japan, South Korea, Australia, and New Zealand,

GS = Global South - Africa, Latin America, the Caribbean, Asia excluding Israel, Japan, South Korea, and Oceania excluding Australia and New Zealand

Comparison of e-Methane per group



Livestock Segment	Enteric methane Emissions (kt)
Dairy GN Intensive	5,565
Dairy GN Pastoral	928
Dairy GS with GN Influence	2,783
Dairy GS	9,275
Beef Taurus GN	9,888
Beef Taurus GS	13,548
Beef Tropical semi-intensive	21,761
Beef Indigenous	2,603.70
Small Ruminants GN meat	1,027.40
Small ruminants GN other	11,055.80
Small ruminants GS	11,027
Buffalo	9,776

What we can do?

1) Established a contact with these actors/players
2) Disseminate the most relevat results
3) Provide a WHFF Vademecum

Thank you