

INAUGURATION ROBERT BAARS

2021-09-24

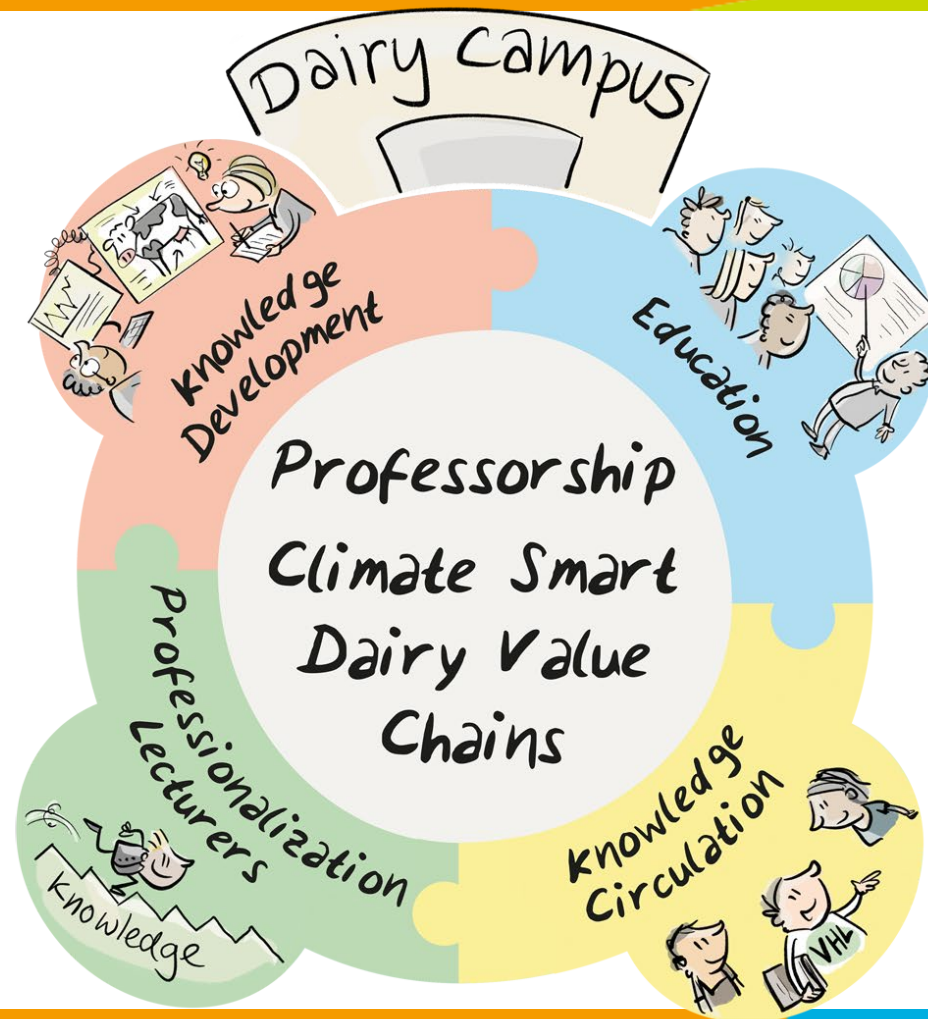
Professorship
Climate Smart
Dairy Value
Chains

Outline

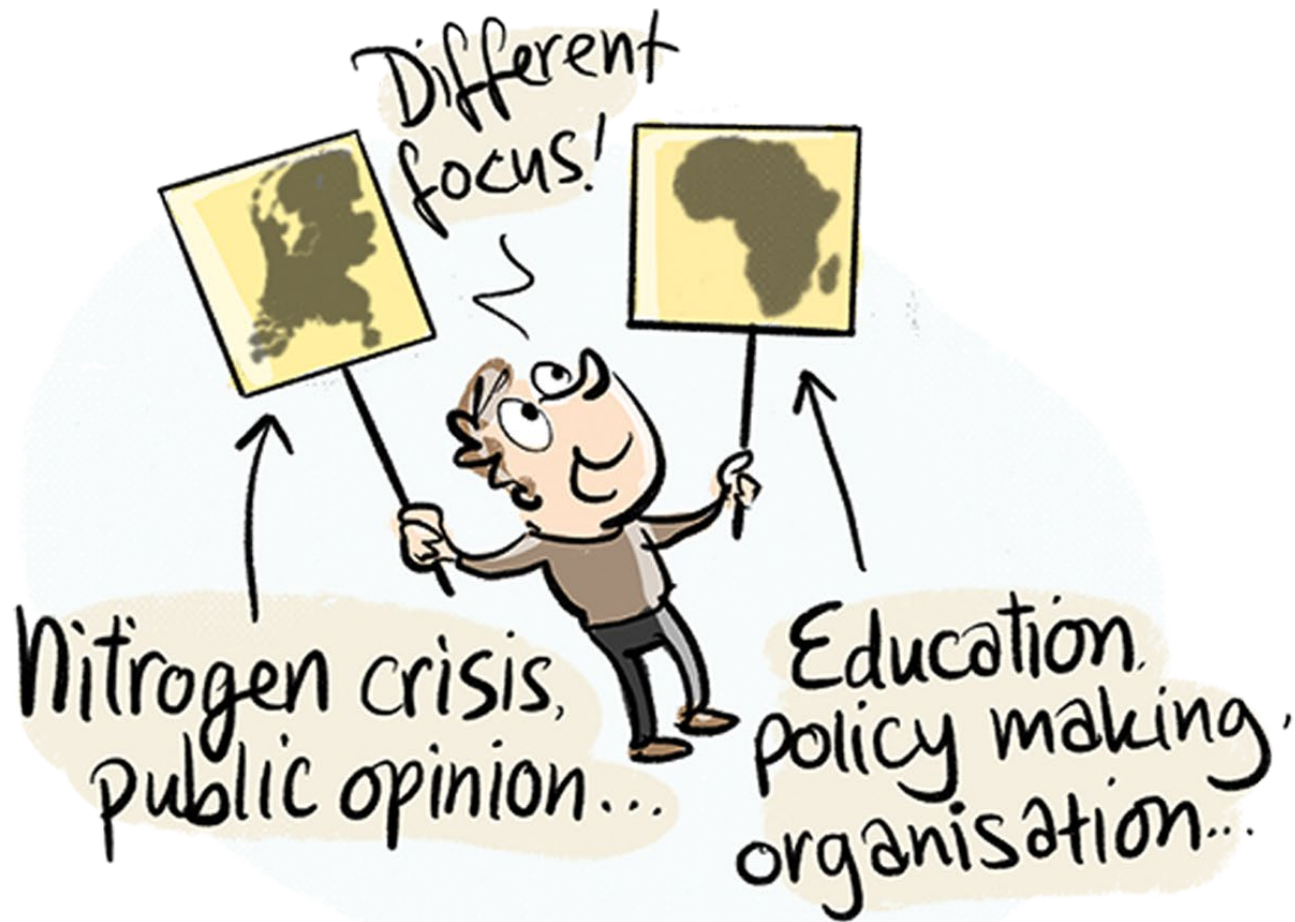


1. Focus professorship CSDVC
2. Climate smart dairy
3. Carbon footprint parameter
4. Nitrogen in the Netherlands
5. Change strategies

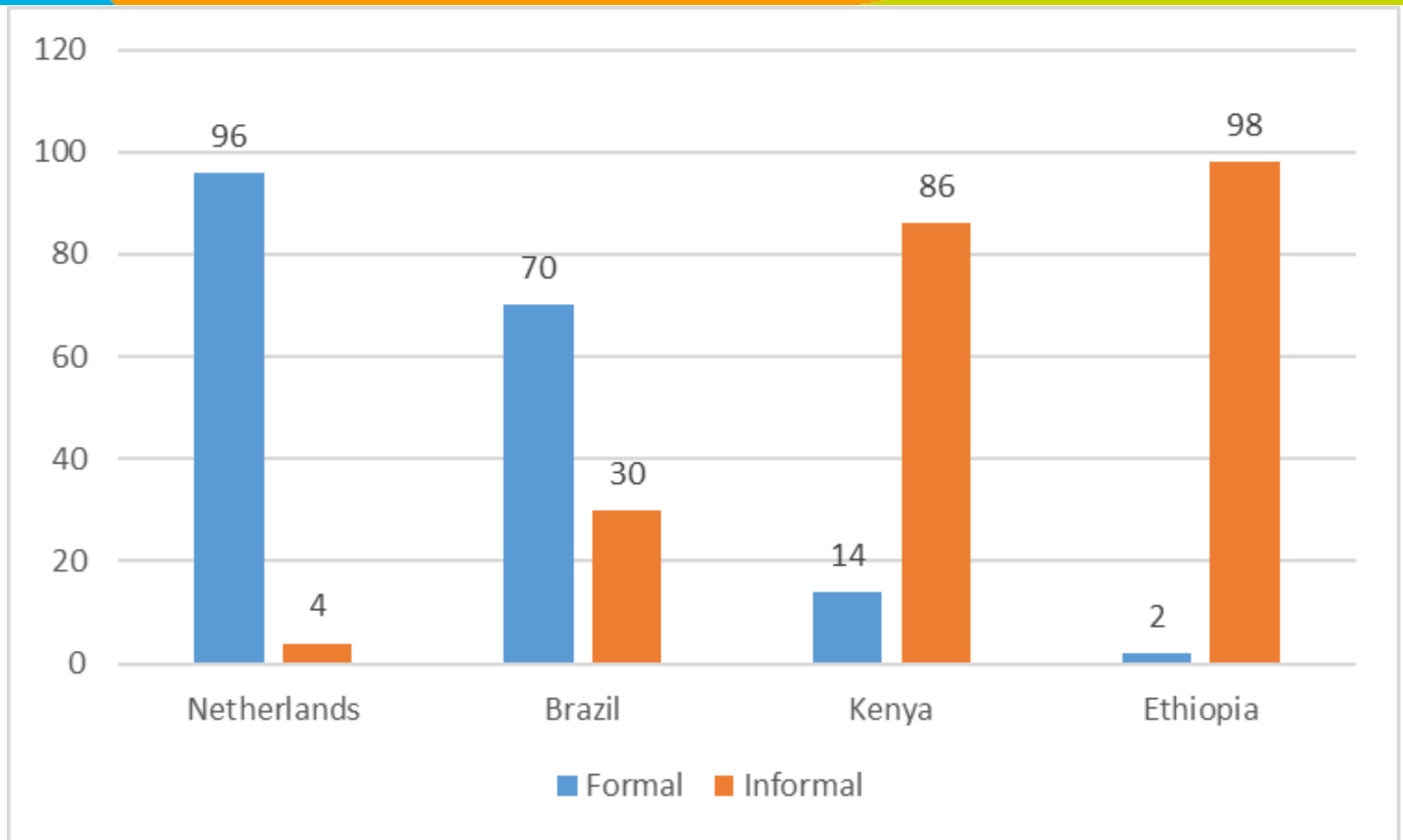
1. Focus professorship Climate Smart Dairy Value Chains



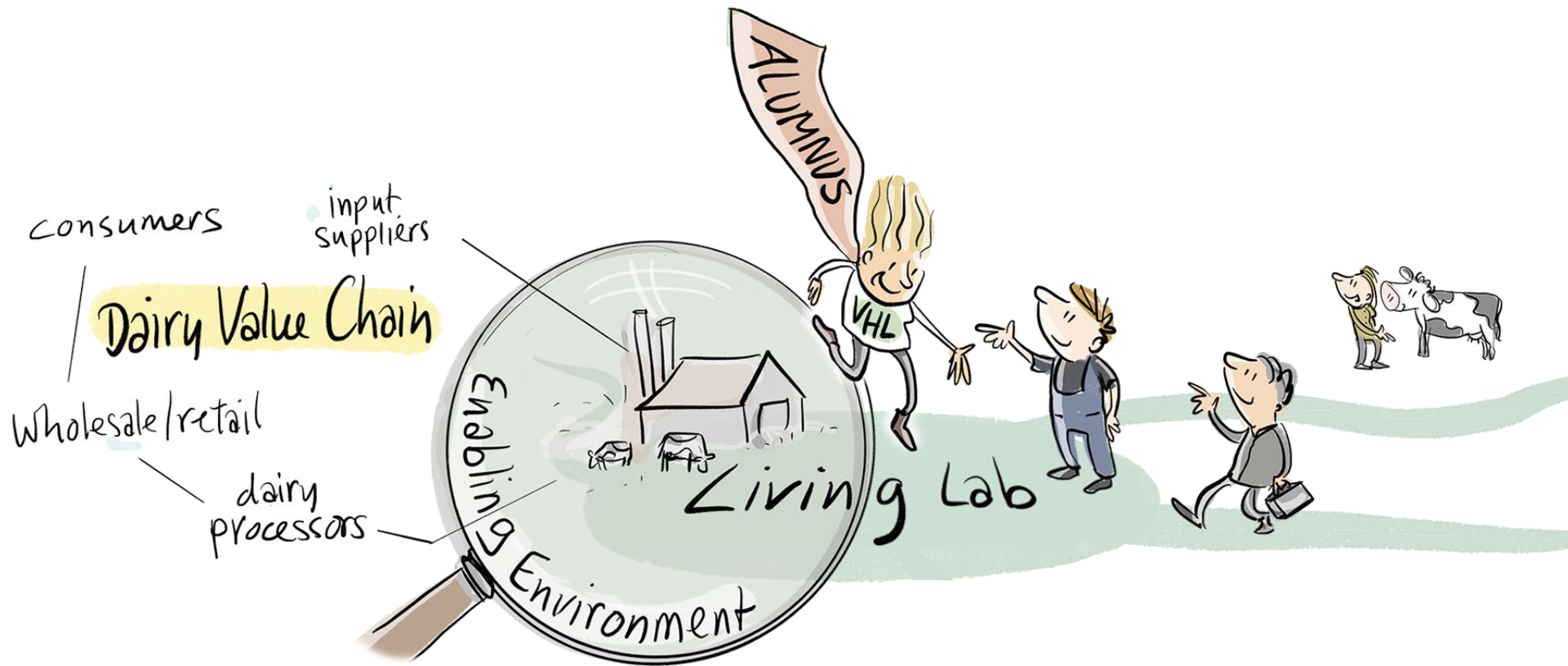
Focus NL & international



Milk delivered to formal and informal chains (2015)



Living labs networks



Applied research in international Living Labs

Funding agents:

- NWO
- RVO
- SIA

Nuffic funding:

- Scholarships
- Institutional collaborations
- Short courses

Students,
researchers &
alumni



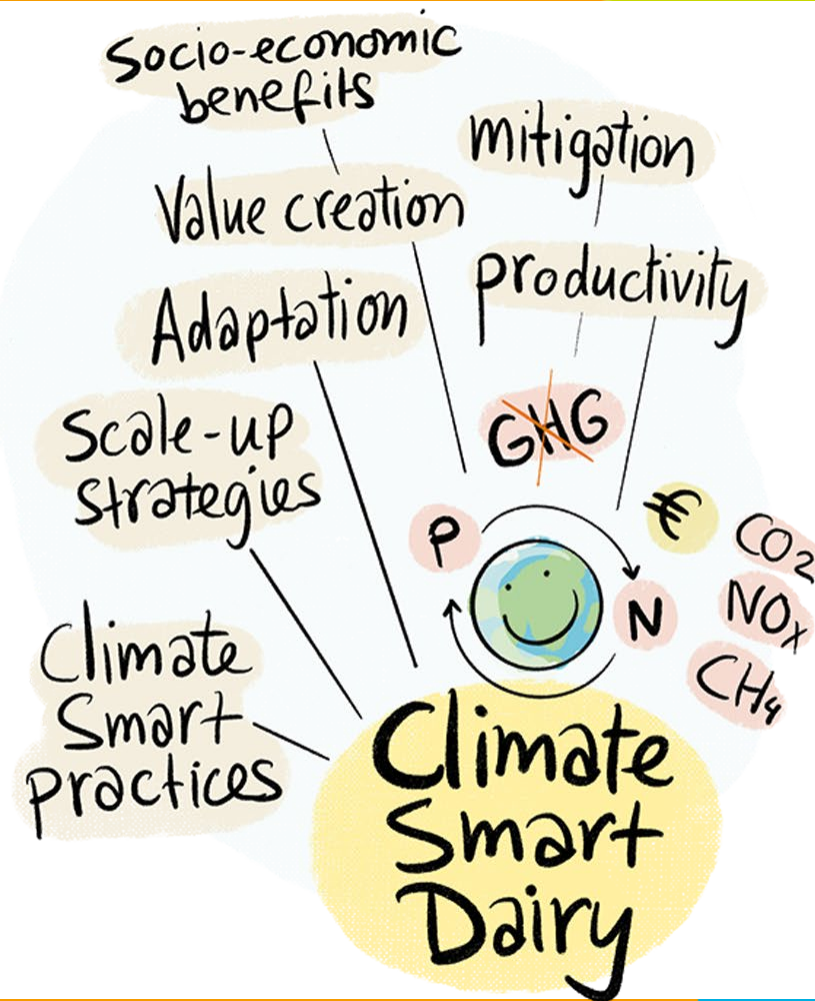
**Living
labs**

Private sector,
government,
knowledge inst.
others





2. Climate Smart Dairy





Climate Smart Agriculture as paradigm

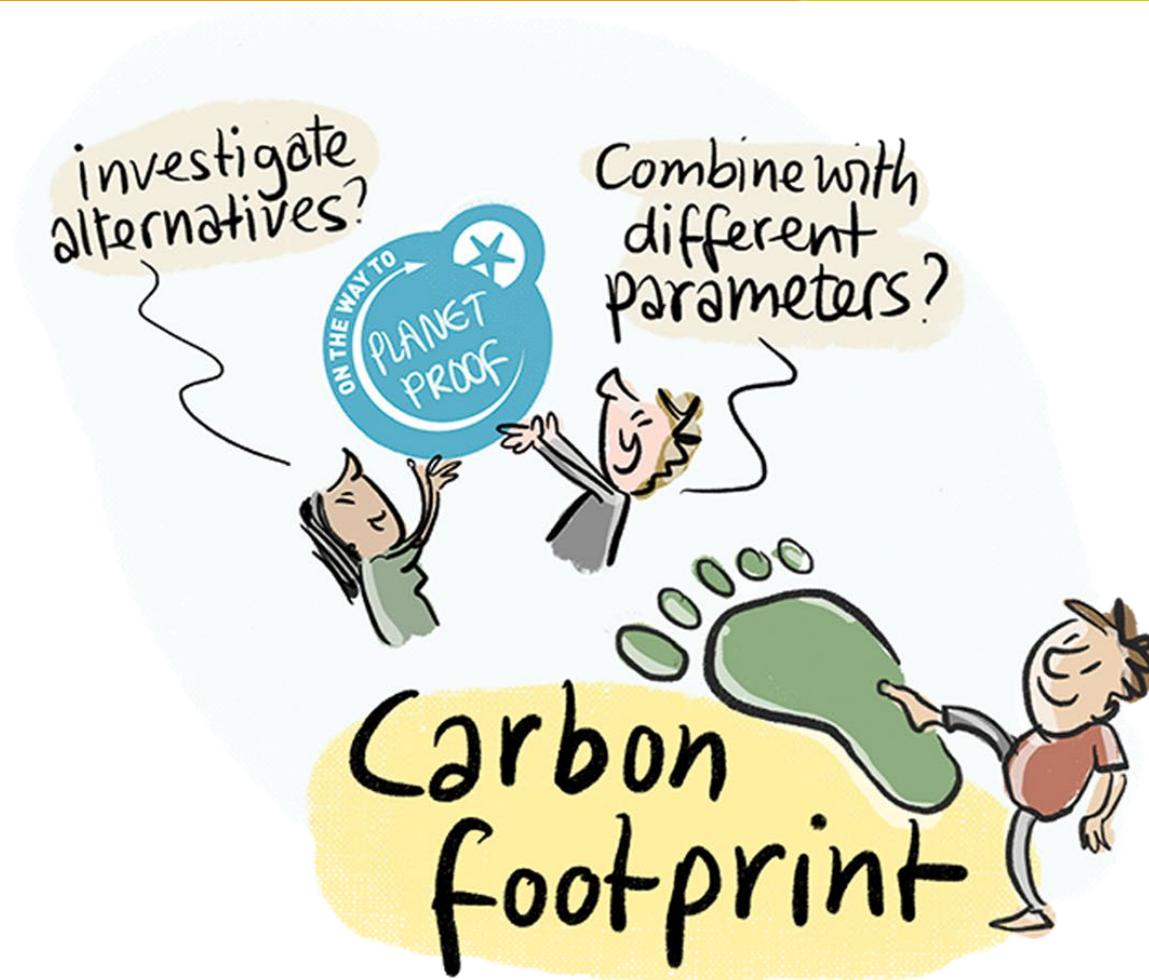
A paradigm is a standard, perspective, or set of ideas.
A paradigm is a way of looking at something.



Science has changed spectacles.
But the farmer is still the farmer,
and the cow still the cow



3. Carbon footprint



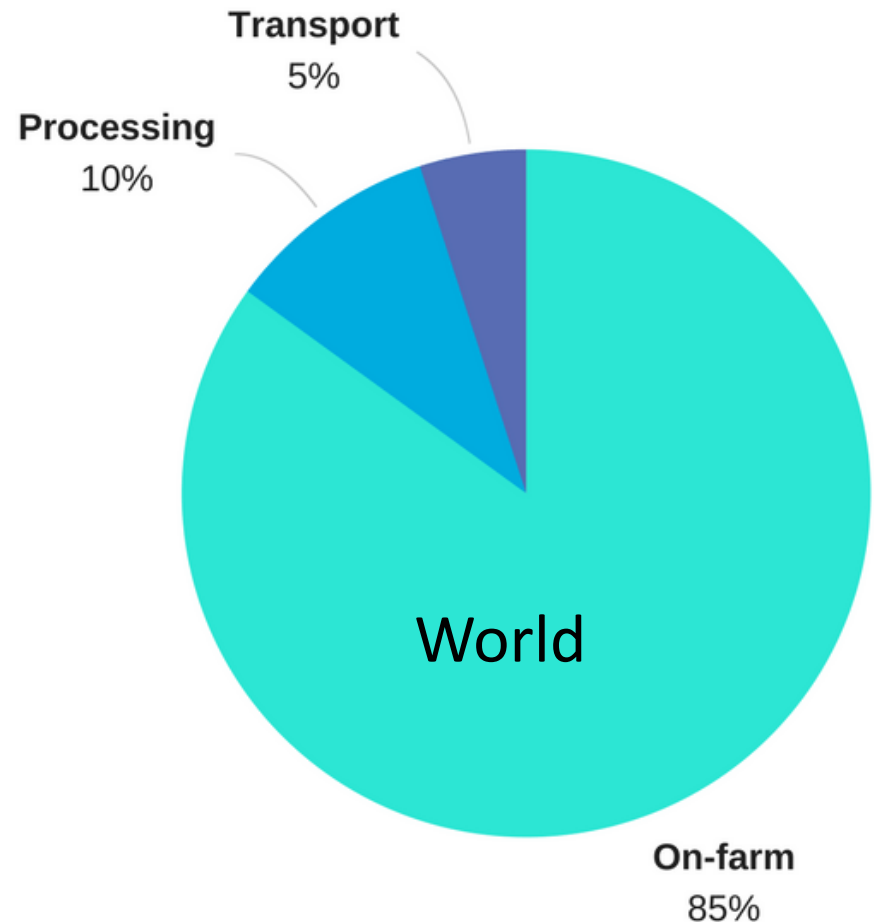
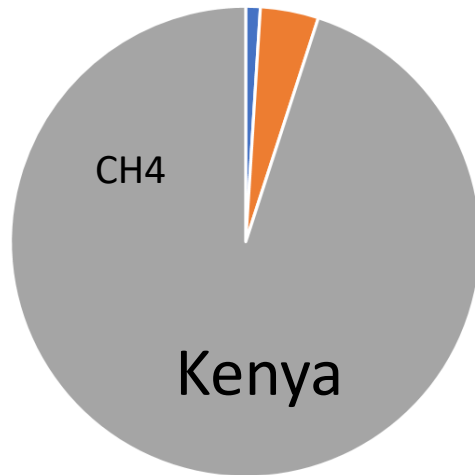
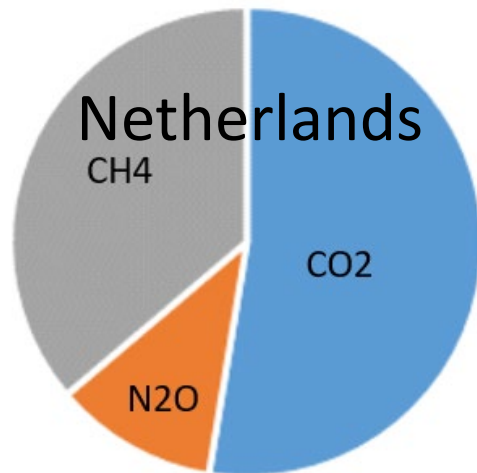
Carbon footprint measured in CO₂-eq/kg milk



Gas		100-year GWP	Main sources
CO ₂	Carbon dioxide	1	Fuel consumption, organic matter soil
CH ₄	Methane	25 (28)	Rumen fermentation, manure storage
N ₂ O	Nitrous oxide	298 (265)	Artificial fertilizer, manure storage & application



Low input low output – relative high methane



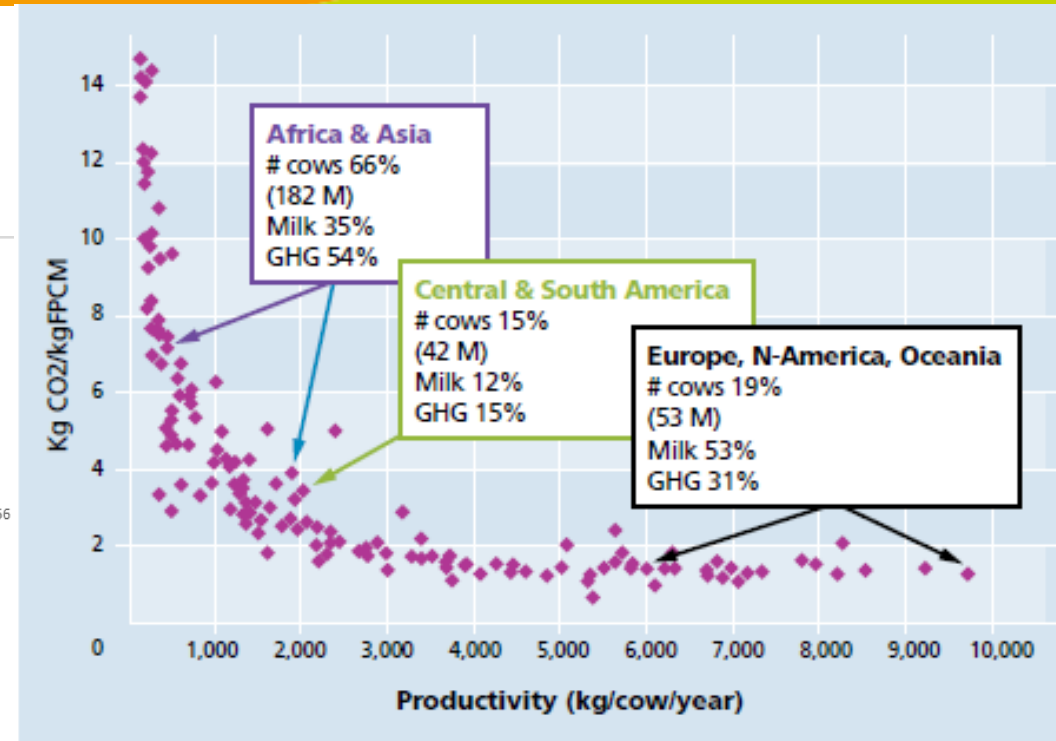
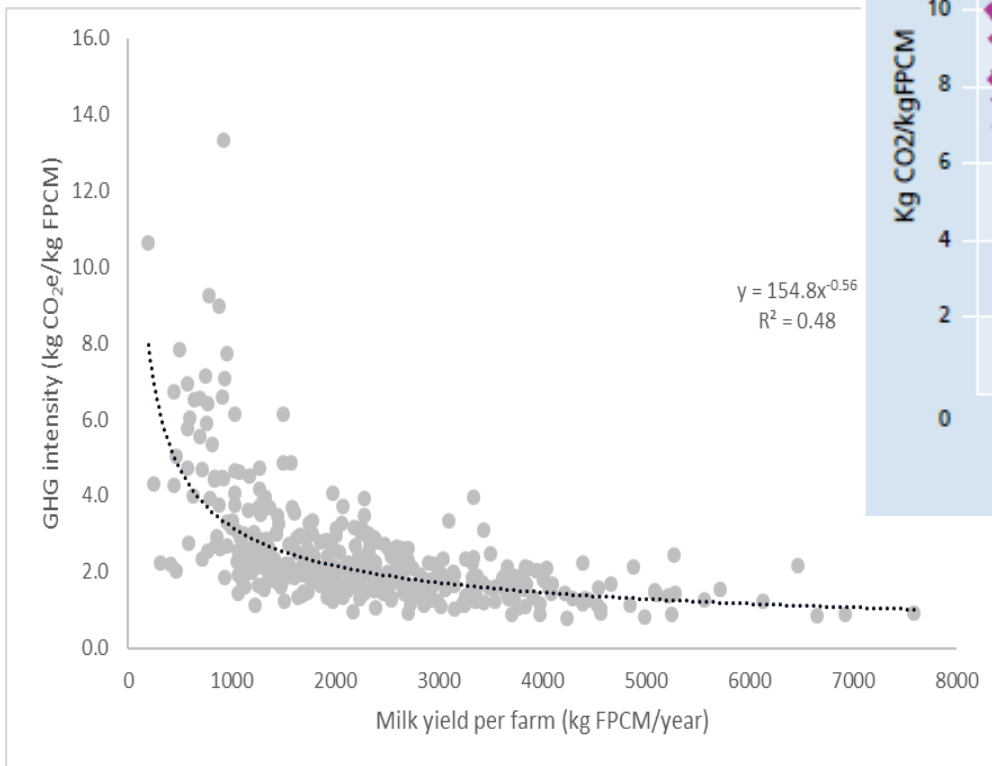
Source NL: Doornewaard, G. J., J. W. Reijs, A. C. G. Beldman, J. H. Jager, and M. W. Hoogeveen. 2017. Sectorrapportage Duurzame Zuivelketen; Prestaties 2016 in perspectief. Rapport 2017-087. Wageningen Economic Research, Wageningen.

Source Kenya: GLEAM 2017. In: FAO & New Zealand Agricultural Greenhouse Gas Research Centre. 2017. Options for low emission development in the Kenya dairy sector - reducing enteric methane for food security and livelihoods. Rome. 43 pp





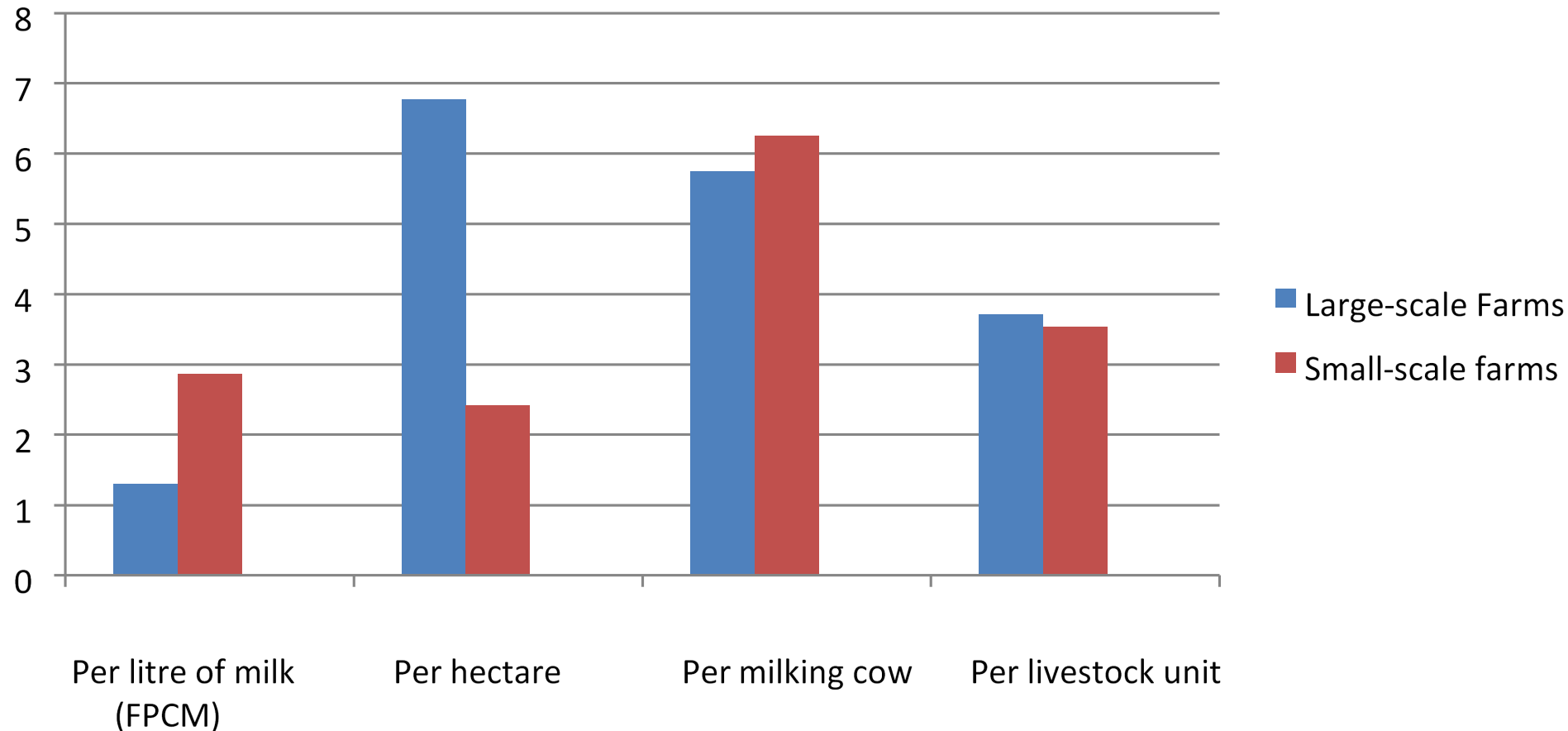
Carbon footprint (CO₂-eq/kg milk) in the world and in Kenya



Sources Kenya: Wilkes et al. 2020;
Source World: Andeweg et al. 2020



CO₂-equivalent per kg milk, ha, cow, LU (Zimbabwe)



Source: Hore, G.M. 2021. Developing Dairy Climate Smart Business Models by Calculating the Carbon Footprint of Dairy Farms in Zimbabwe. Master Thesis, Van Hall Larenstein University of Applied Sciences, Velp, the Netherlands.



Carbon footprint (CO₂-eq/kg milk) (Ethiopia)



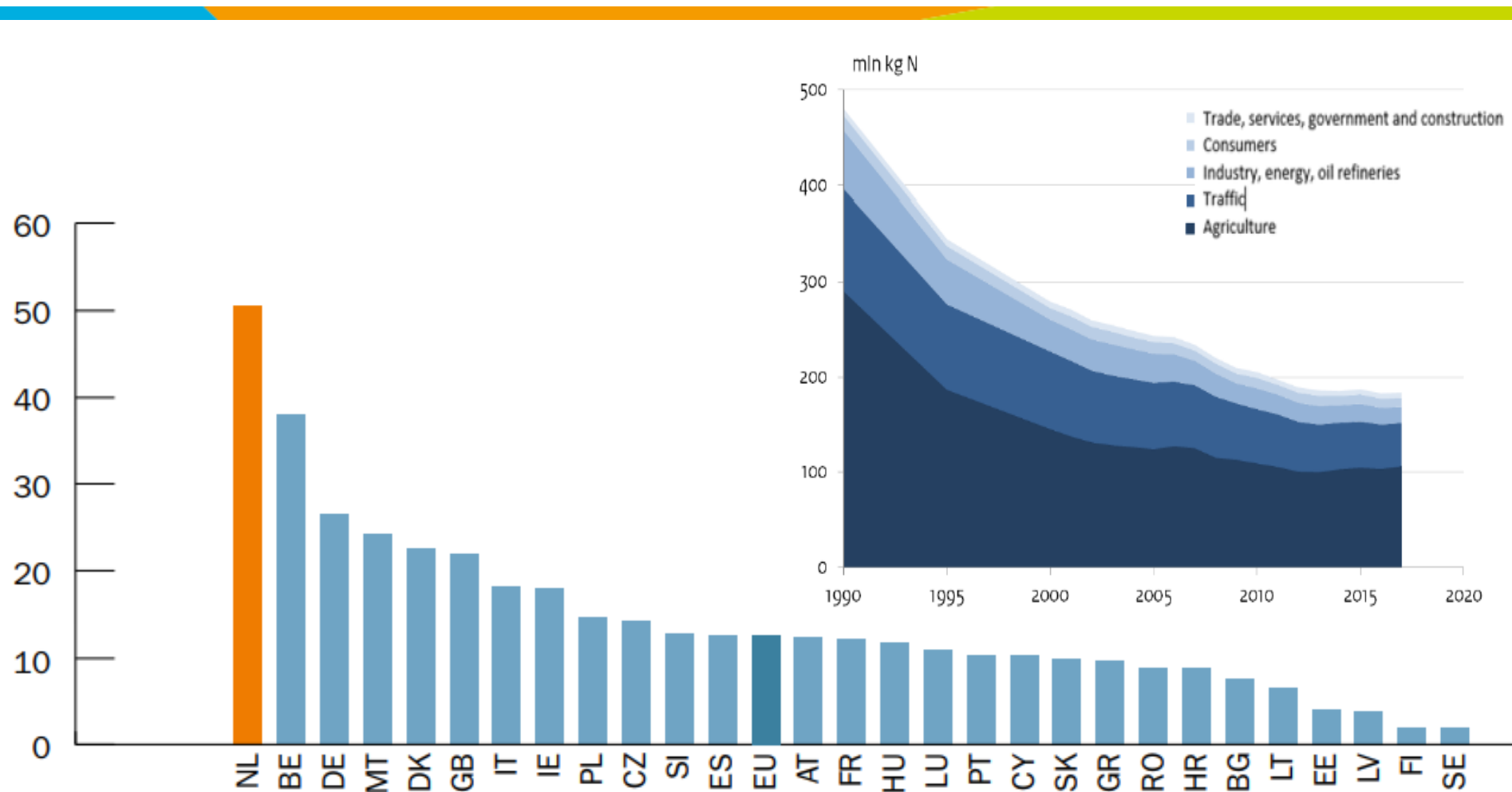
Allocation (Ethiopia)	Urban	Peri-urban
Unallocated	1.79	6.52
Food (milk, meat)	1.71	6.28
Economic	1.52	4.61
Livelihood	1.02	3.45



4. Nitrogen in the Netherlands



N emission to the air (kg N/ha) - 2017



Source bar chart: TNO. 2019. Factsheet Emissies en Depositie van Stikstof in Nederland. [PDF]

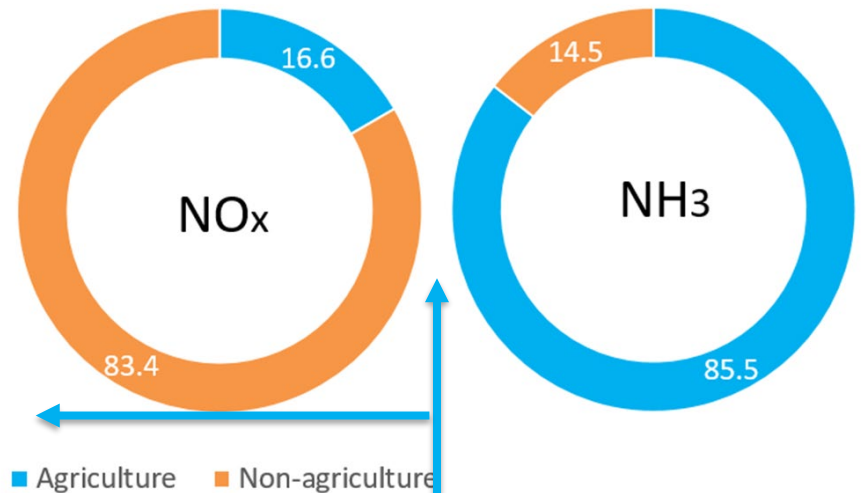
Available at: <<https://www.tno.nl/nl/over-tno/nieuws/2019/10/factsheet-stikstofemiss>> [Accessed 11-9-2021].

Source line chart: RIVM, 2019.



Nitrogen in NL (in mln kg N – 2018)

EU Bird and habitat directives



N feed	420		N product	361
N air	23		N air	89
N fertiliser	206		N soil	241
N rest	15		N balance	-27
N IN total	664		N OUT total	664

Source: CBS, 2020 and 2021. Central Bureau voor de Statistiek.

EU Water and nitrate directives

NO₃
NH₄
NO₂

Nitrogen versus carbon footprint

Interesting that “we” discuss

- Nitrogen emissions per ha
- GHG emissions per kg milk

	/kg milk	/ha
Carbon footprint	✓	✗
Nitrogen	✗	✓



5. Change strategies



Transition pathways dairy

Africa/Asia	The Netherlands
• Affordable nutritious diets	• High-tech closed systems
• Keep milk safe	• High-tech open systems
• Inclusive competitive chains	• Sustainable dairy production
• Sustainable dairy production	• Organic farming
• Capacity building professionals	• Social enterprises (care, etc.)
• Development, trade policies	• Nature and landscape inclusive
	• Stop farming
Source: Andeweg, K. et al. 2020. Dairy for nutrition, employment and sustainability. An action agenda for the Dutch contribution to dairy development in Africa and Asia. Position paper. Netherlands Food Partnership	Source: SER 2021. Naar duurzame toekomstperspectieven voor de landbouw. Verkenning naar een landbouwakkoord. Sociaal-Economische Raad. https://www.ser.nl/nl/Publicaties/toekomstperspectieven-landbouw

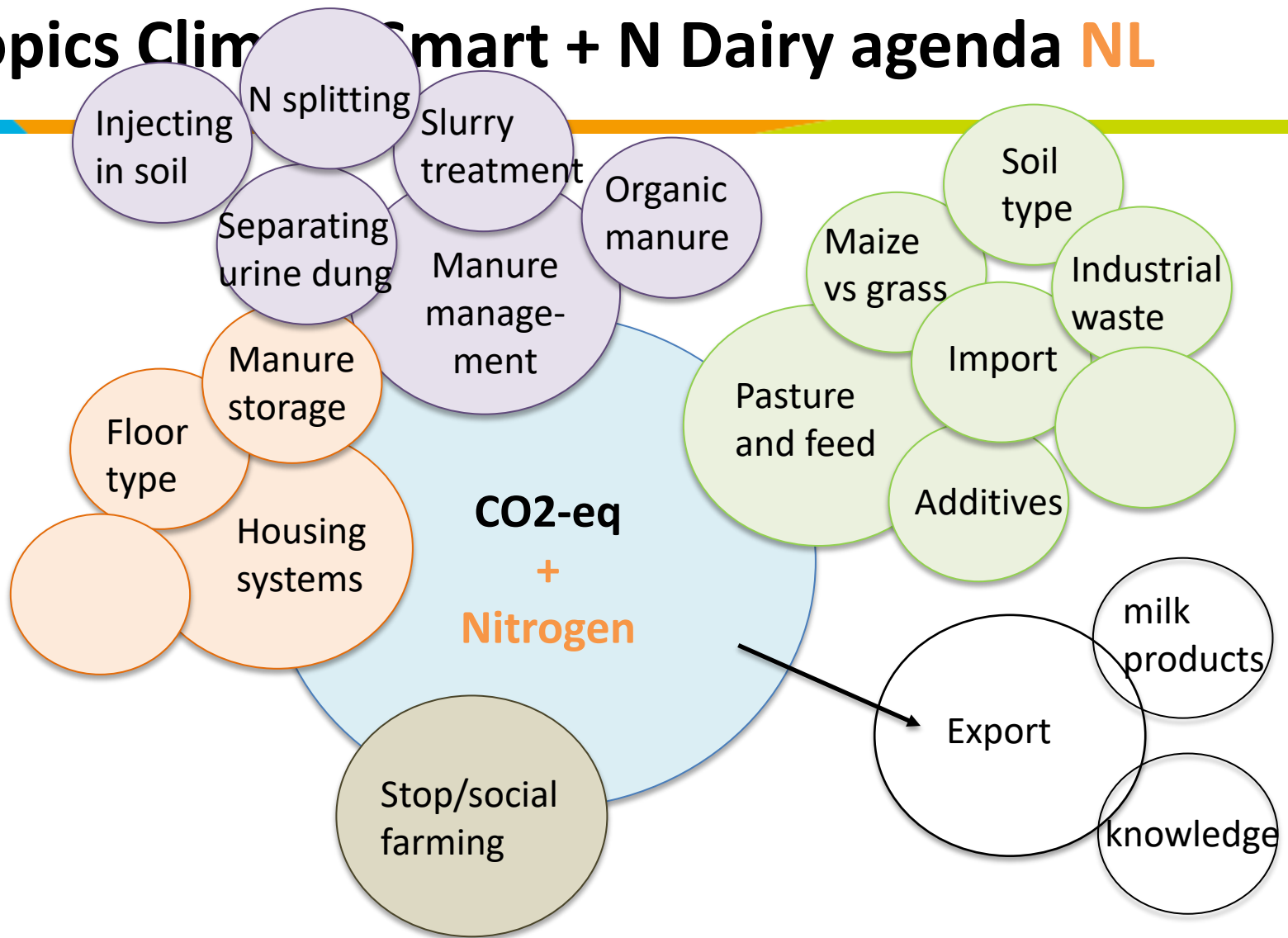


Transition pathways dairy production chain

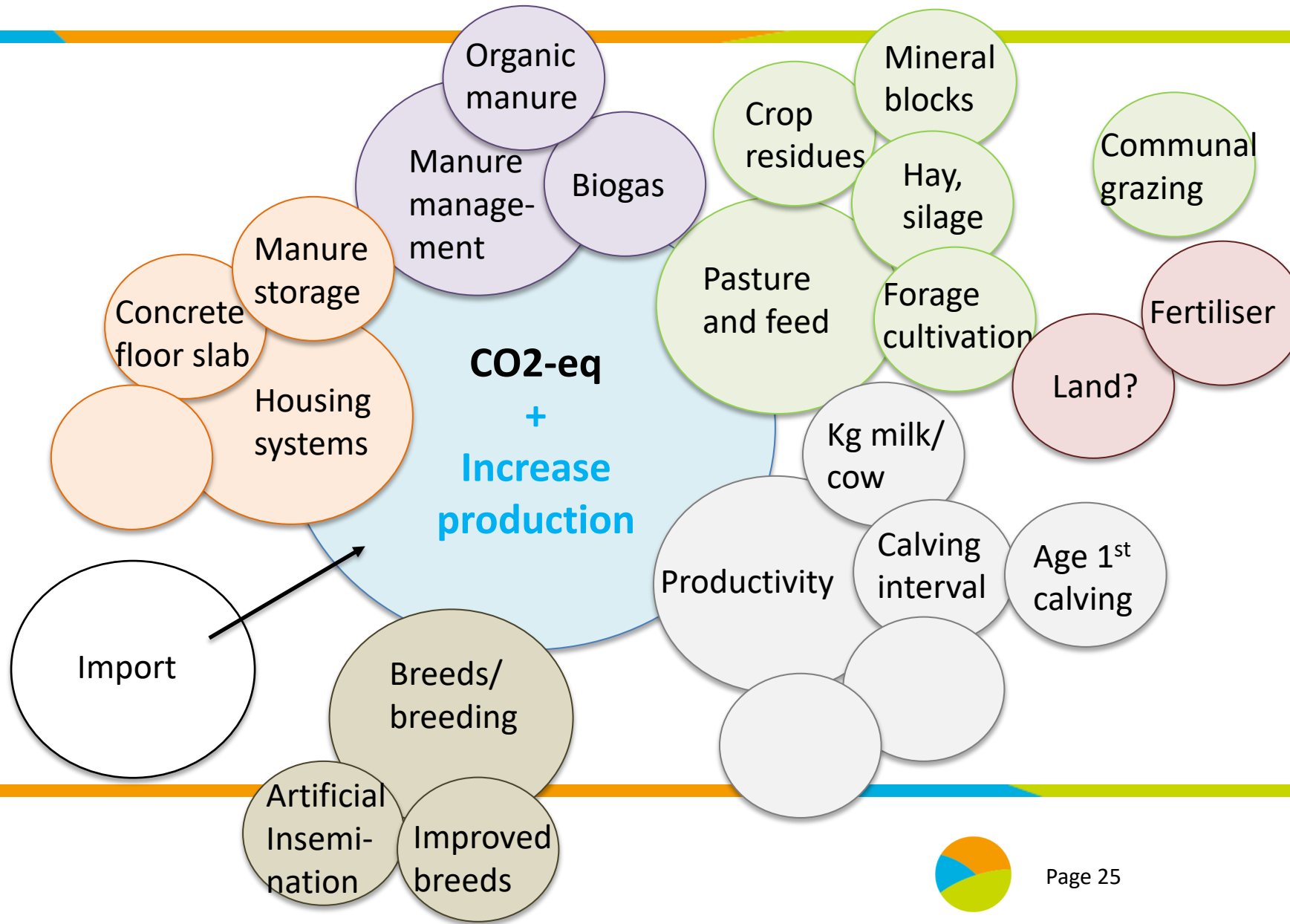
Africa/Asia	The Netherlands
Affordable nutritious diets	High-tech closed systems
Keep milk safe	High-tech open systems
Inclusive competitive chains	Sustainable dairy production
Sustainable dairy production	Organic farming (+)
Capacity building professionals	Social enterprises (care, etc.)
Development, trade policies	Nature and landscape inclusive
	Stop farming



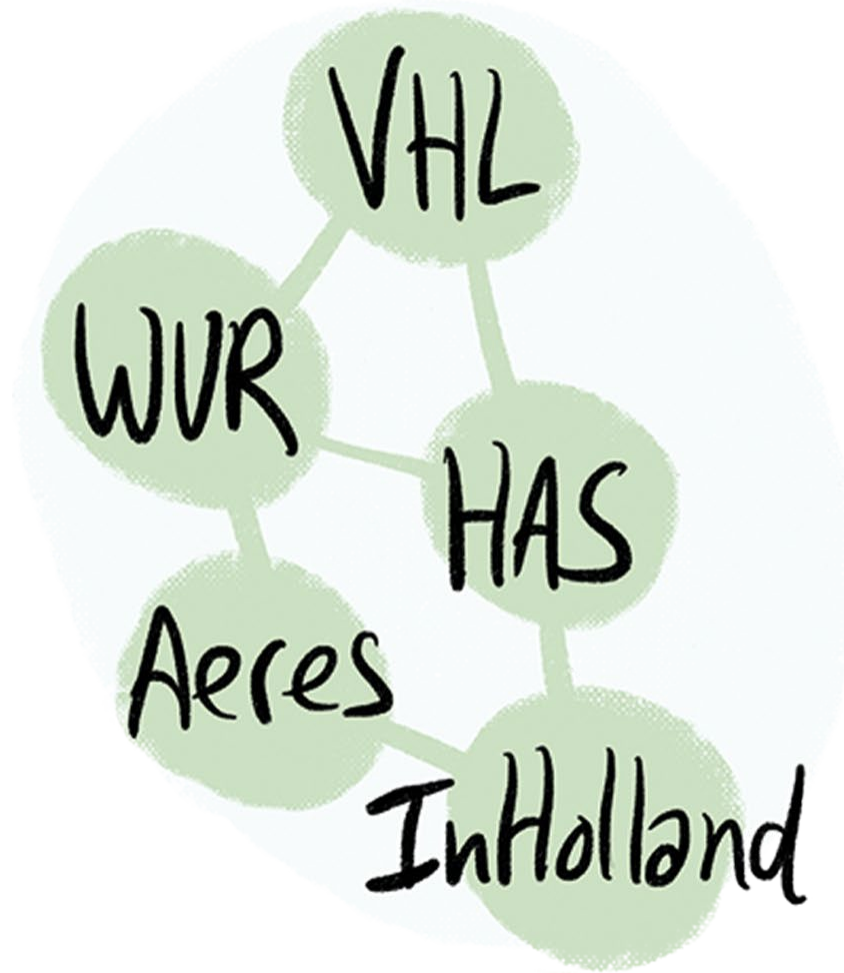
Topics Climate Smart + N Dairy agenda NL



Topics Climate Smart Dairy agenda **Africa**



NL knowledge institution partners





Thank you for....

attending
ideas
inspirations