Ministerie van Economische Zaken

WAGENINGEN UR
For quality of life

Internationale kansen bij verduurzaming van de veehouderij

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

Ministerie van Economische Zaken

WAGENINGEN UR
For quality of life

13.00-13.10 **Opening** drs. Henri Kool, EZ

Deel 1:
Wat zijn de internationale ontwikkelingen en wat zijn de internationale speelvelden?
13.10 - 13.30 dr. Henning Steinfeld,FAO
13.30 - 13.50 dr. Pierre Gerber, FAO
13.50 - 14.10 dr. Martin Scholten, Animal Sciences Group Wageningen UR

14.10 - 14.30 **Vragen vanuit de zaal**
14.30 - 15.10 **Koffiepauze**

Deel 2:
Hoe kunnen wij als Nederland het verschil maken in het mondiale speelveld?
15.10 - 15.30 mr. dr. Hans Hoogeveen MPA, EZ

15.30 - 16.00 **Reacties uit het veld**
- dr.ir. Leon Marchal, ForFarmers Group B.V.
- ing. Jaap Petraeus, Friesland Campina
- ir. Onno van Eijk, stichting Natuur en Milieu

16.00 - 16.45 **Forumdiscussie met de zaal**

16.45 – 17.00 **Reflectie op het symposium**

17.00 **Netwerkborrel**

GLOBAL AGENDA OF ACTION

IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT

Henning Steinfeld, Food and Agriculture Organization of the UN

A Global Resource Crisis

- Climate change
- Land scarcity
- Water scarcity
- Nitrogen and Phosphorus cycles
- Energy crisis – peak oil
- Mass extinction – rapid loss of biodiversity

Global livestock and natural resources

- ~ 26 % of all land is grazed
- ~ 35 % of all crop land is for feed
- ~ 20 % of total water use
- ~ 15 % of greenhouse gas emissions
- Largest source of N_2O
- Driver of deforestation (grazing, soy) and land degradation
- Major source of water pollution

Contributions of the livestock sector

- **Supports livelihoods**

1 billion poor, 40% of global agricultural GDP, 3.5% annual growth

- **Food security and nutrition**

25% of global protein consumption, critical nutrients

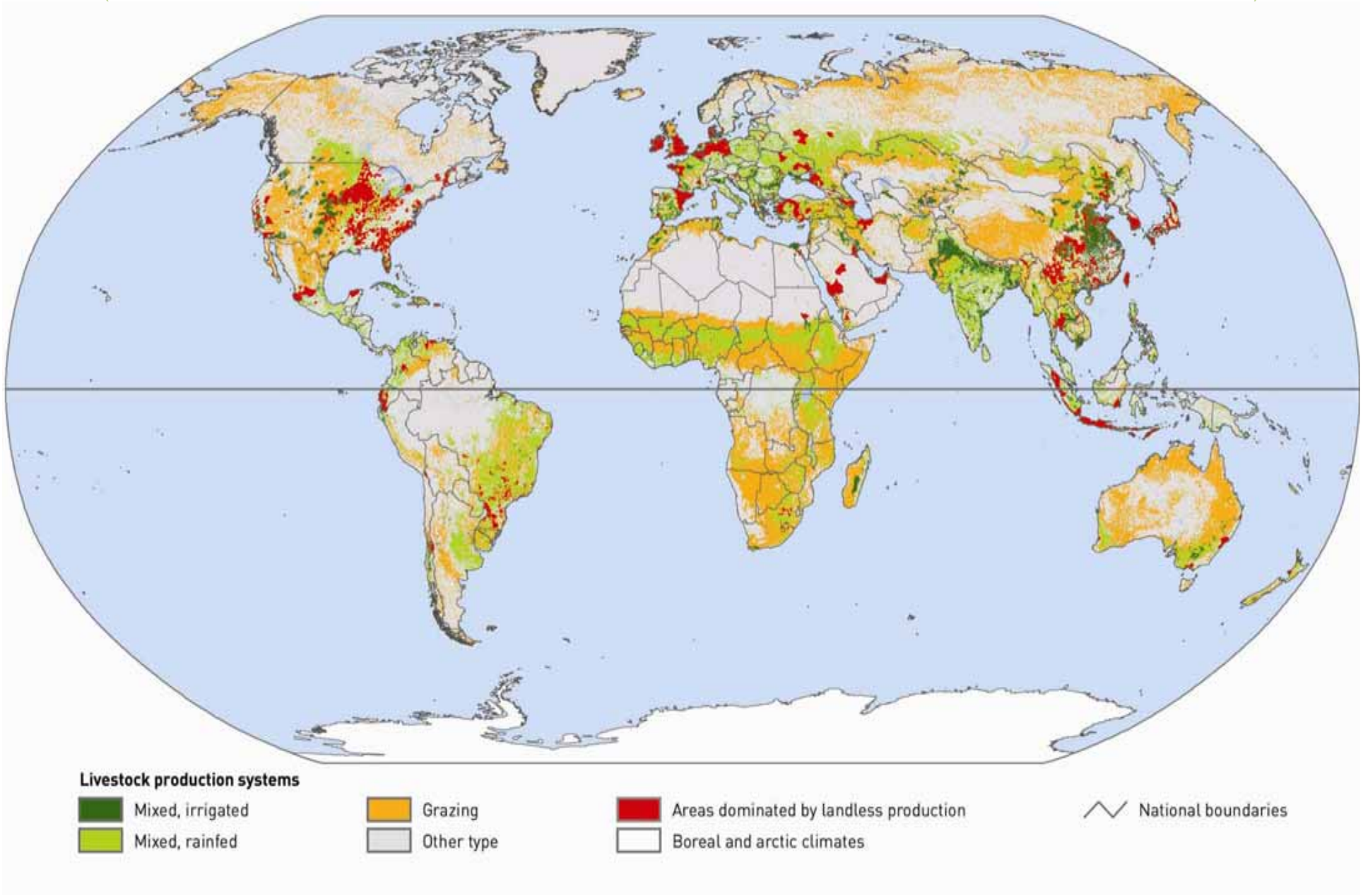
- **Economic development**

Poverty reduction, rural growth and income

- **Non-food services**

Fertilizer and draught, asset and insurance, by-products

Distribution of livestock production systems



Global demand and future trends

World demand for livestock food products since 1990:

+70% by 2050

- Population growth : *+30% or 9.3 billion people by 2050*
- Income growth : *+2% per year until 2050*
- Urbanization: *70% urban in 2050*

GLOBAL AGENDA OF ACTION

How can livestock help to address the Global Resource Crisis?

WHAT ARE THE OPTIONS?

What are the Options?

Reduce/shift consumption?

- Overconsumption in certain countries/groups only
- Dietary convergence on its way
- Shift to low impact products

Alternatives and substitutes?

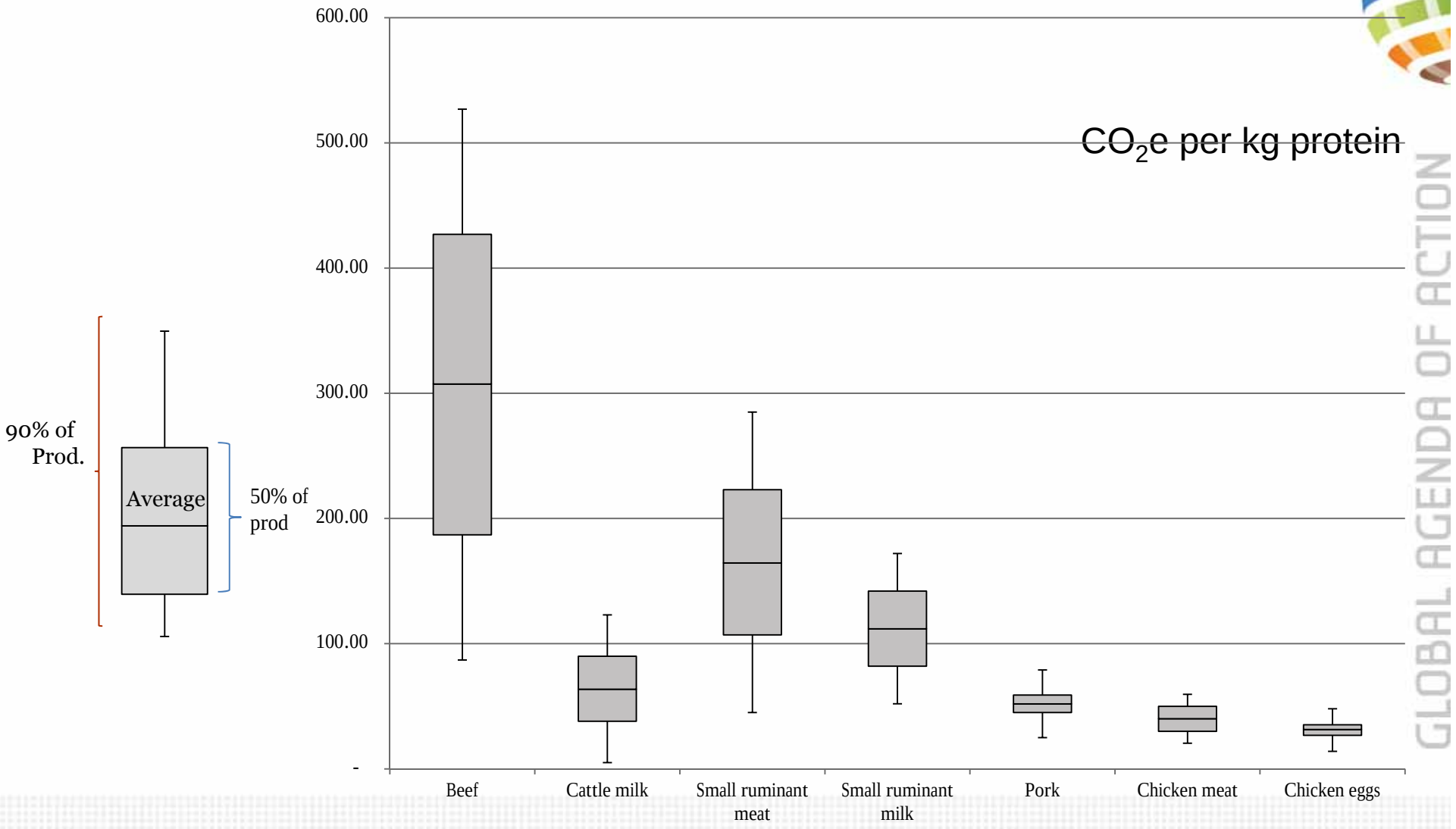
- Fish
- Synthetic meat
- Meat substitutes

What are the Options?

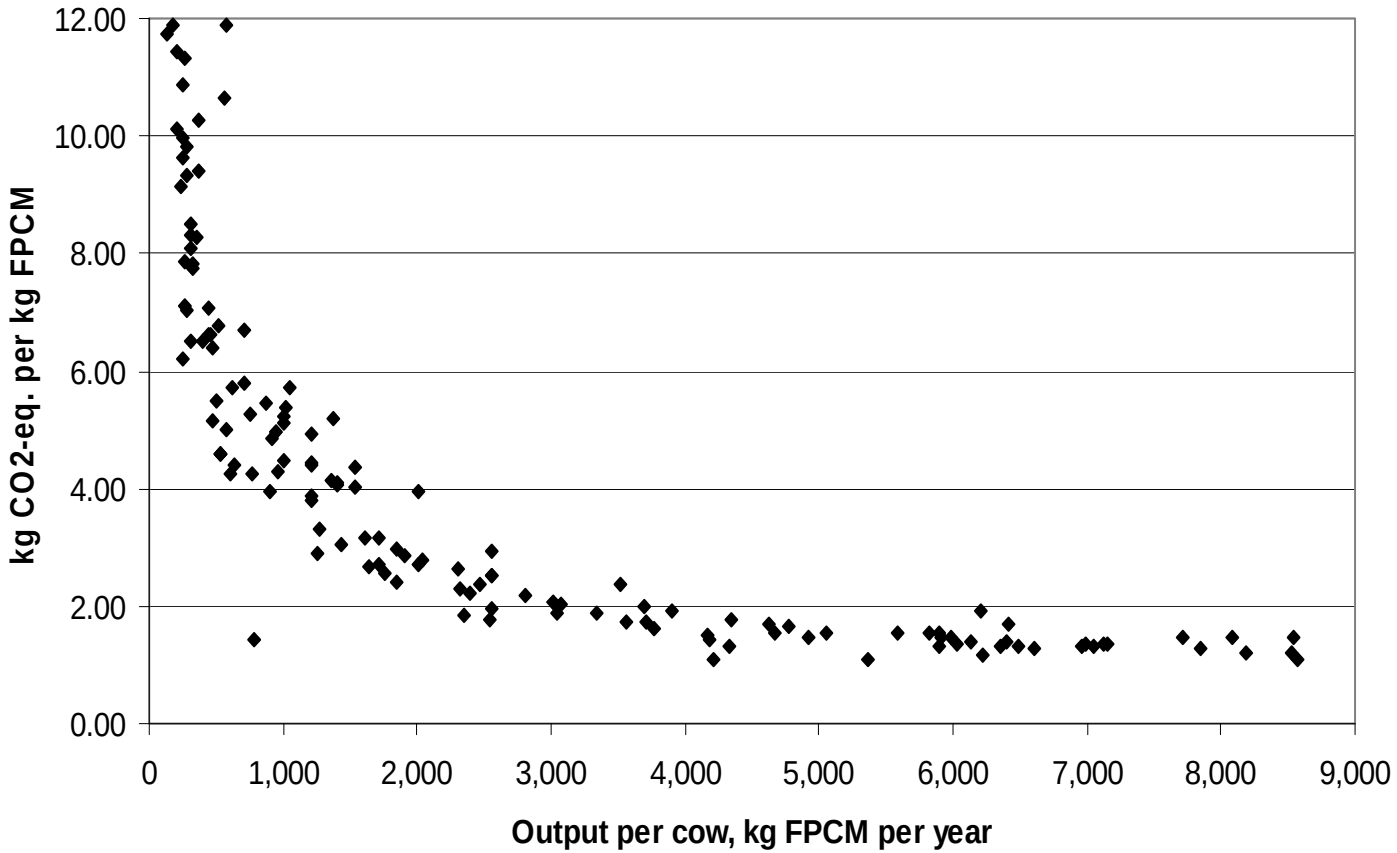
Technical solutions for improving production exist:

- To improve resource efficiency (output per unit of land, water, nutrients, energy)
- To sustainably manage grazing land
- To substantially reduce nutrient and energy losses from livestock waste

Emission intensities



Relationship between total greenhouse gas emissions and milk output per cow

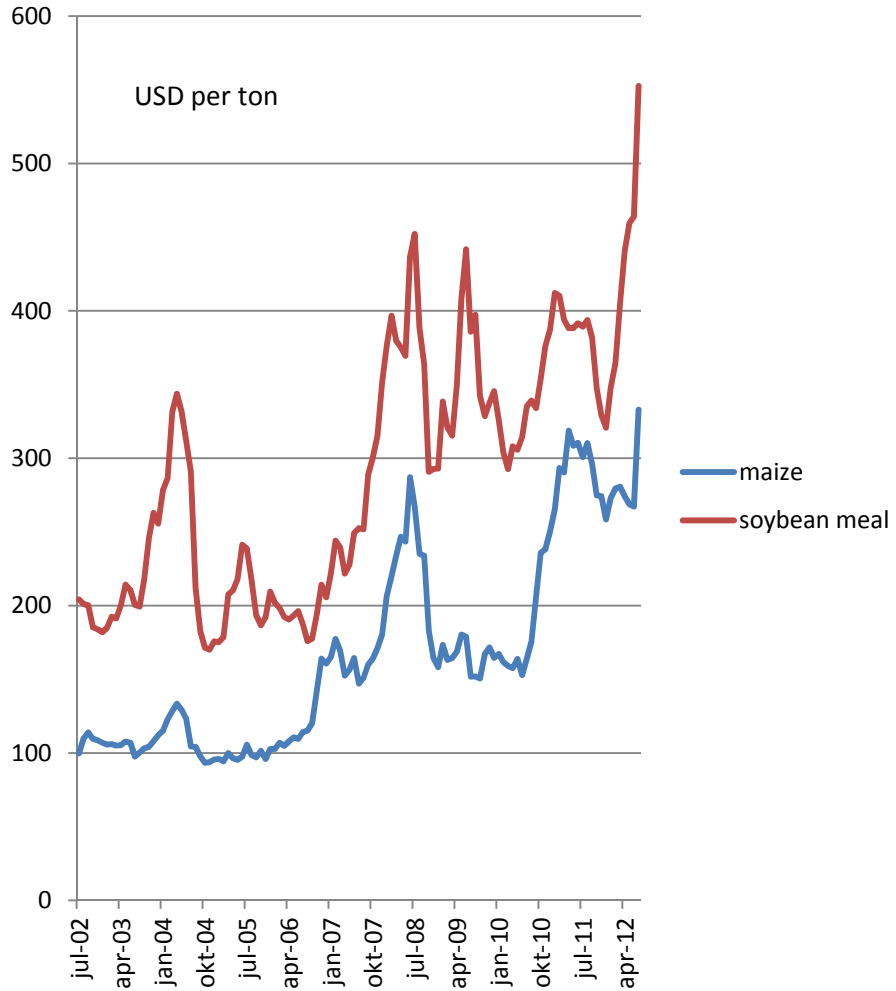


GLOBAL AGENDA OF ACTION

The game changer: resource scarcity

- Resource scarcity has become an economic reality – coping with scarcity an economic necessity
- Livestock has a great potential to respond

Feed Prices over the last 10 years



GLOBAL AGENDA OF ACTION

GLOBAL AGENDA OF ACTION
IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT

Global Problems need a Global Response

A GLOBAL AGENDA OF ACTION IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT

GLOBAL AGENDA OF ACTION

Where we start from

- Growing demand for livestock products needs to be accommodated within the context of finite resources
- Large efficiency gains are necessary and possible
- But also: social, economic and health advantages of livestock need to be captured
- Size and complexity of the task require multiple actions by multiple stakeholders
- “no harm” – animal welfare, health

Nature of the Agenda

- Multi-stakeholder partnership
- Open and voluntary
- Inclusive and consensual
- Continuous improvement
- Knowledge based
- Respect

GLOBAL AGENDA OF ACTION

Where we focus

Three Focus Areas:

- **Closing the efficiency gap** – raising the performance of large numbers of producers
- **Restoring the value of grasslands** – transform grasslands for environmental service provision
- **Waste to worth** – recycle and recover energy and nutrients from animal waste

A Global Agenda of Action

Steps

- 3 multi-stakeholder meetings, 6 focus area workshops
- Endorsement by FAO's Committee on Agriculture (May 2012)
- Action programs are being developed
- Key partners
  - Governments
  - Private sector and producers
  - NGOs and civil society
  - Knowledge – research
  - intergovernmental

GLOBAL AGENDA OF ACTION

What we do together

Inform & Analyse
To better understand resource use issues, to develop harmonized methods to measure resource use efficiency and to identify entry points for improvements.

Consult & Network
To build consensus and share knowledge on technology, best practices, policies and institutional environment

Guide & Pilot
To provide strategic guidance on innovation and investments and to catalyze resource use efficient practices at scale.

GLOBAL AGENDA OF ACTION
IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT

Thank you

henning.steinfeld@fao.org

www.livestockdialogue.org

Ministerie van Economische Zaken

WAGENINGEN UR
For quality of life

Internationale kansen bij verduurzaming van de veehouderij

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

A global assessment of GHG emissions along livestock supply chains and options for mitigation
preview

Ede, 7 May 2013

Pierre Gerber, Senior Policy Officer, FAO-AGA

MITIGATION of CLIMATE CHANGE in AGRICULTURE
MICCA

FAO's livestock LCA

- Goal: identify low emission pathways for the livestock sector

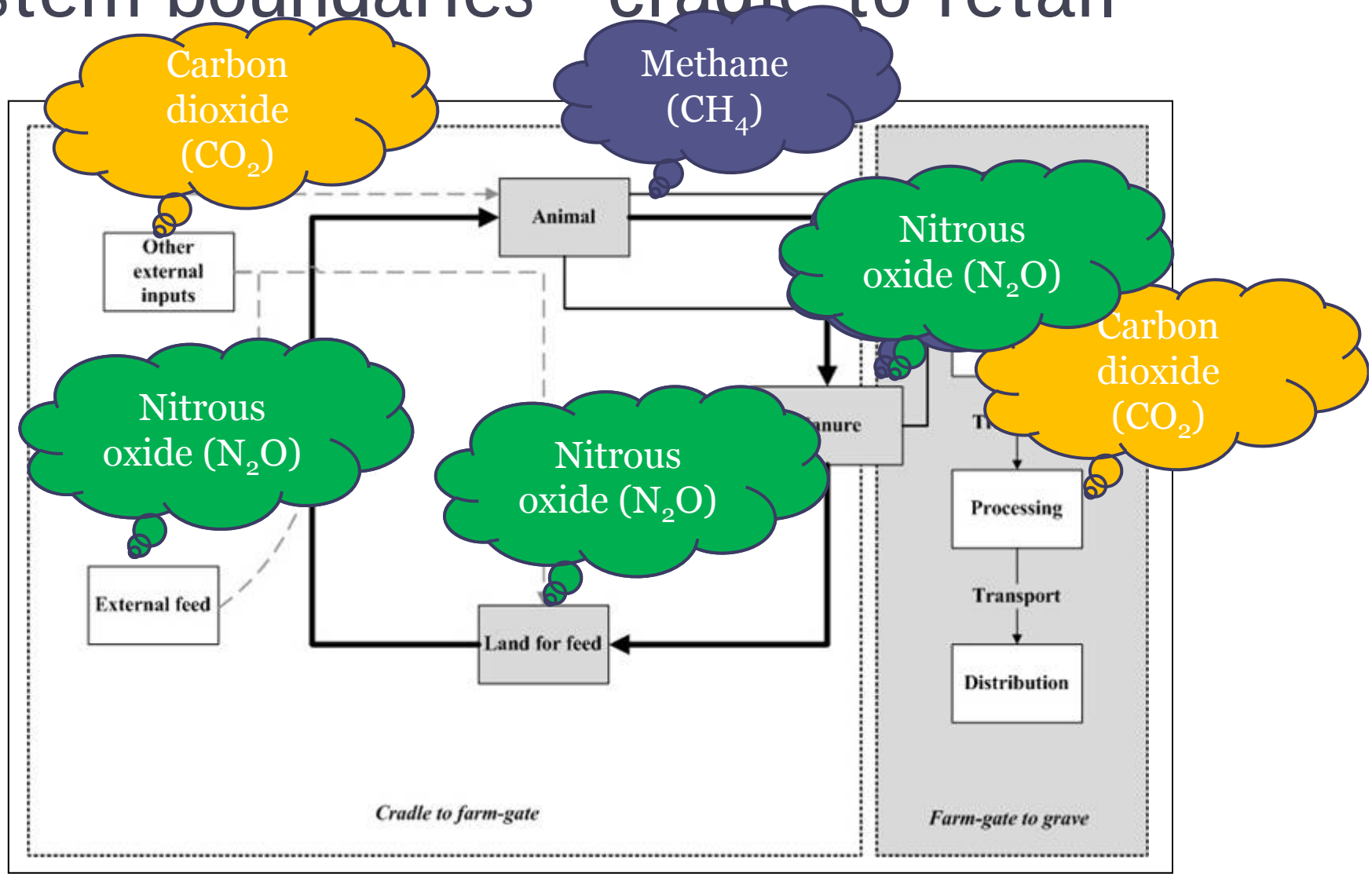
- Specific objective of LCA: produce disagregated estimates of global GHG emissions and emissions intensity for main:
  - livestock species cattle, small ruminants, buffalo, pigs, chicken
  - production systems
  - world regions and agro-ecoloical zones
  - emissions categories along supply chains

- Coupled with economic analysis

- Linked to multi-stakeholder initiatives

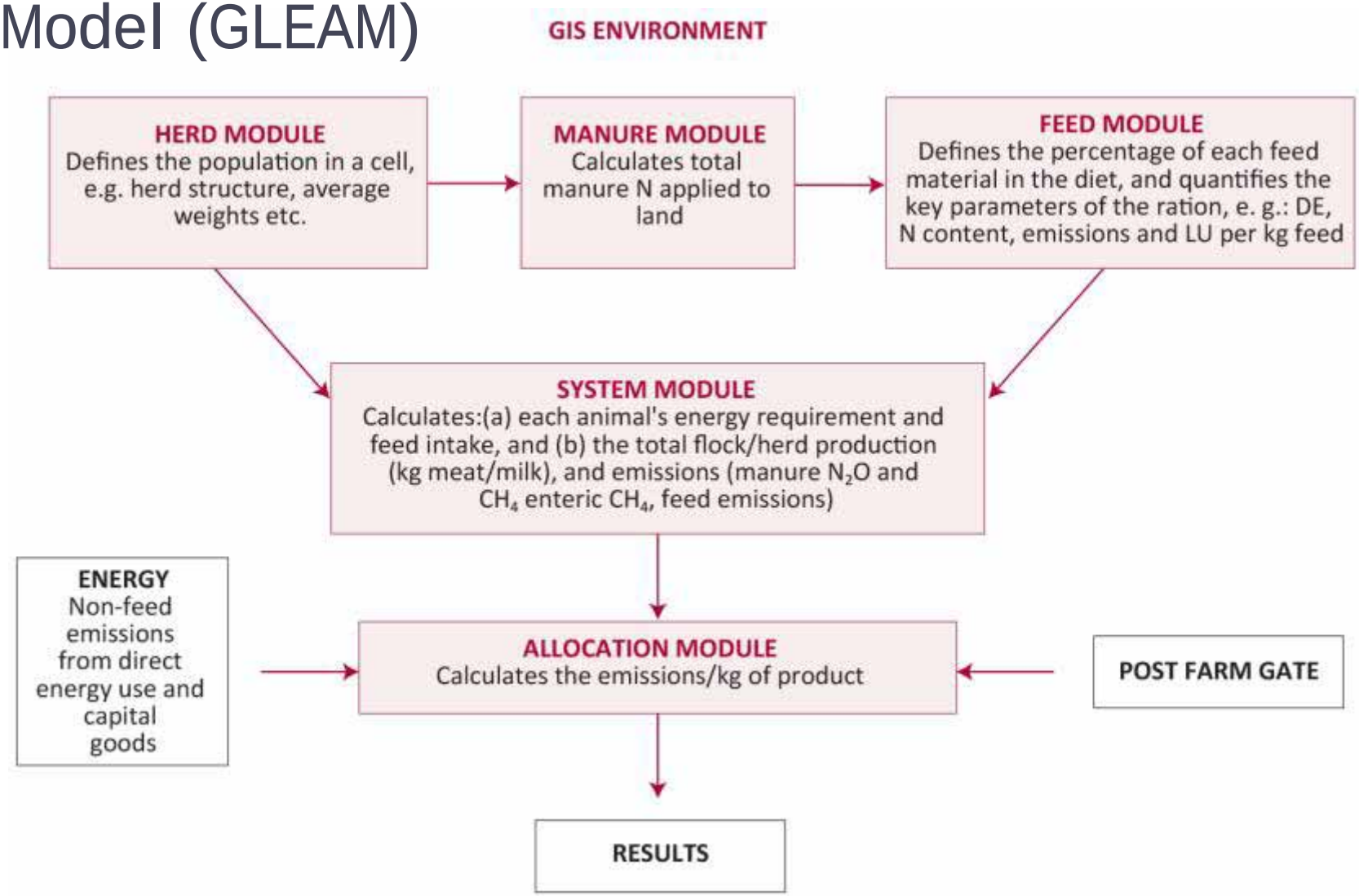
GLEAM
Global Livestock Environment Assessment Model

System boundaries – cradle to retail



System boundary

Global Livestock Environmental Assessment Model (GLEAM)



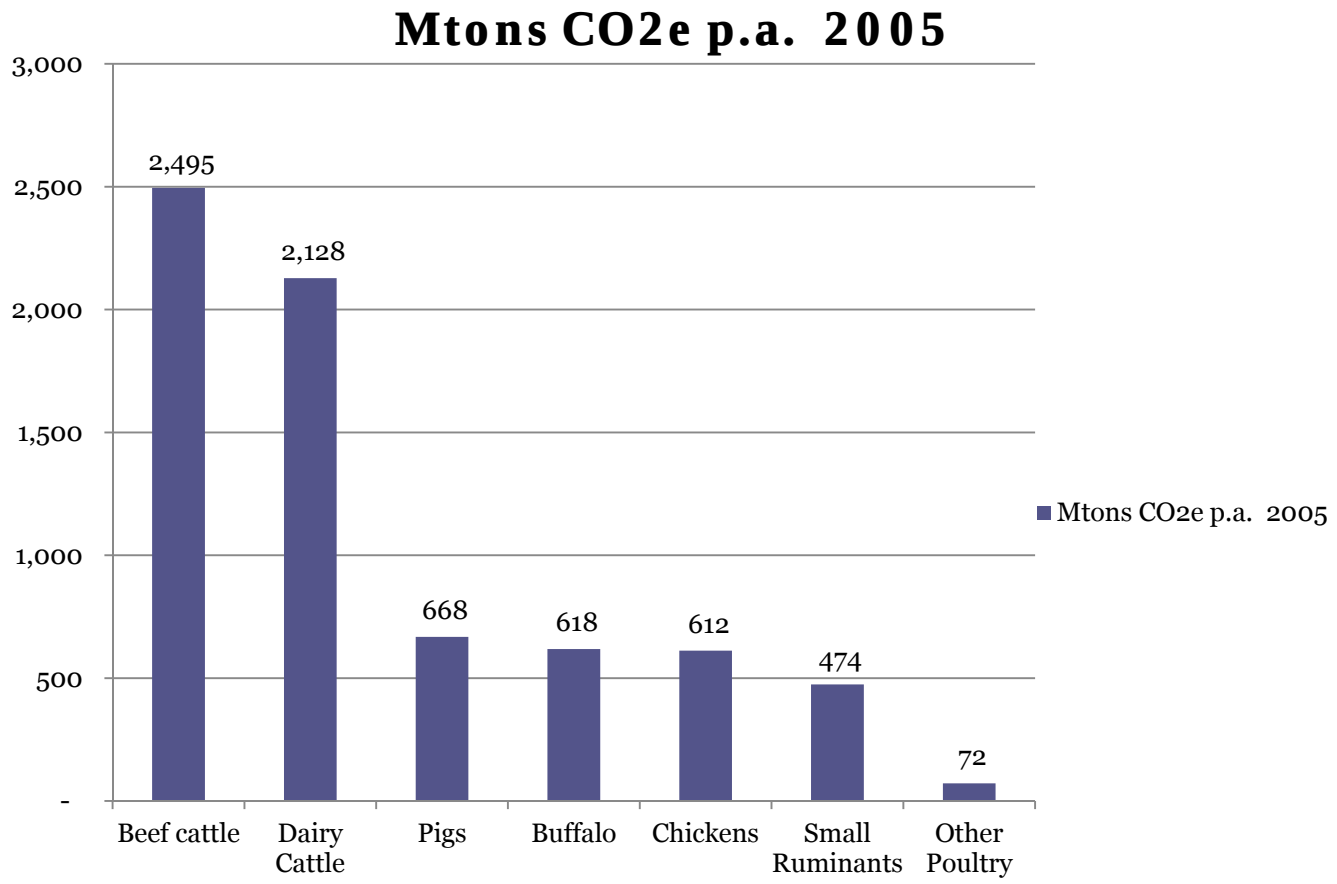
GLEAM - main features

- Computes emissions at local level (cells on a map)
- Can generate averages and ranges at different scales
- Developed at FAO, in collaboration with WUR and other partners
  - new data layers can be included as they become available
  - calculation rules can be modified according to most recent developments
- Allows for scenario analysis

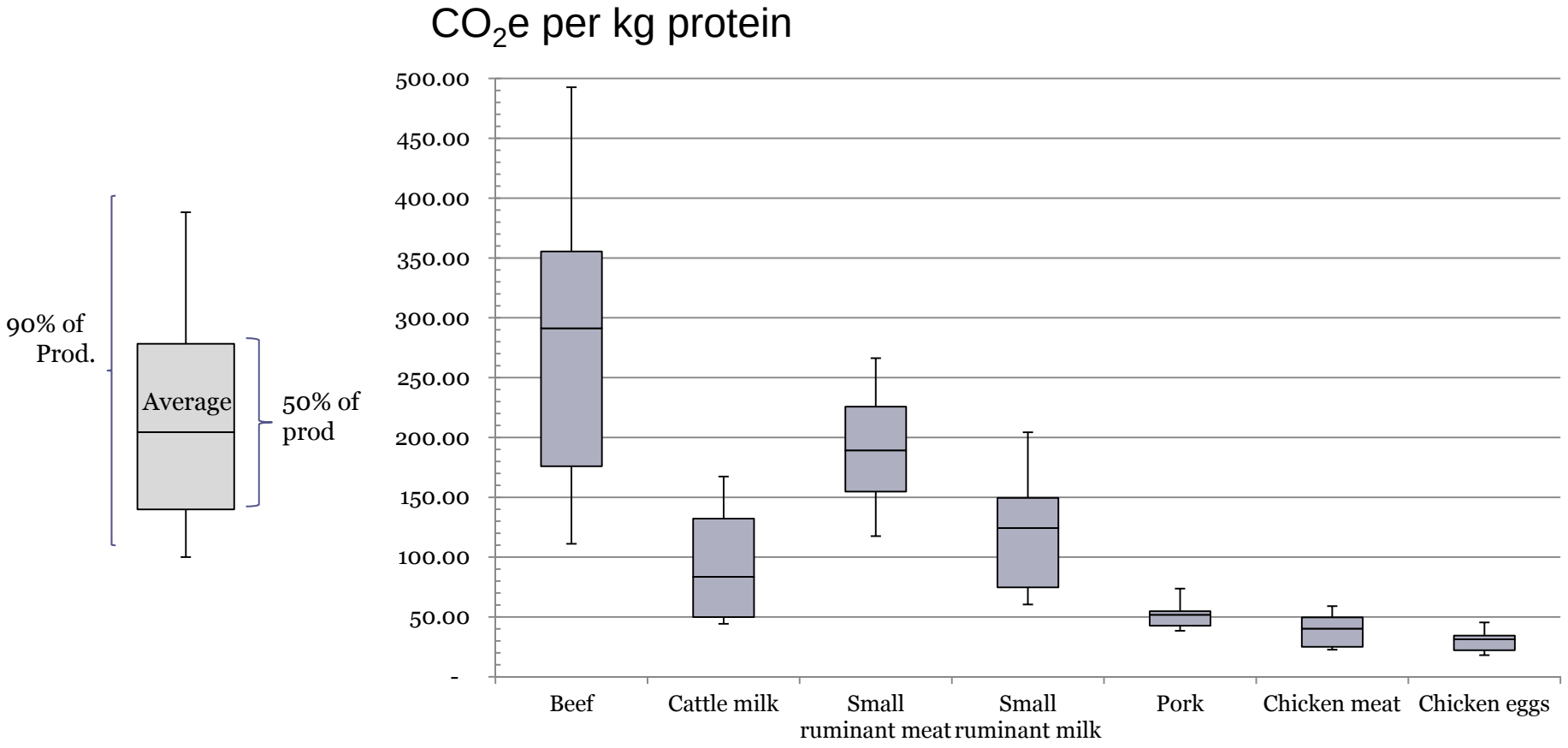
- Now used for the quantification of GHG emissions; will be expanded to other livestock-environment interactions (e.g. land use, nutrients, water)

Where are the emissions?

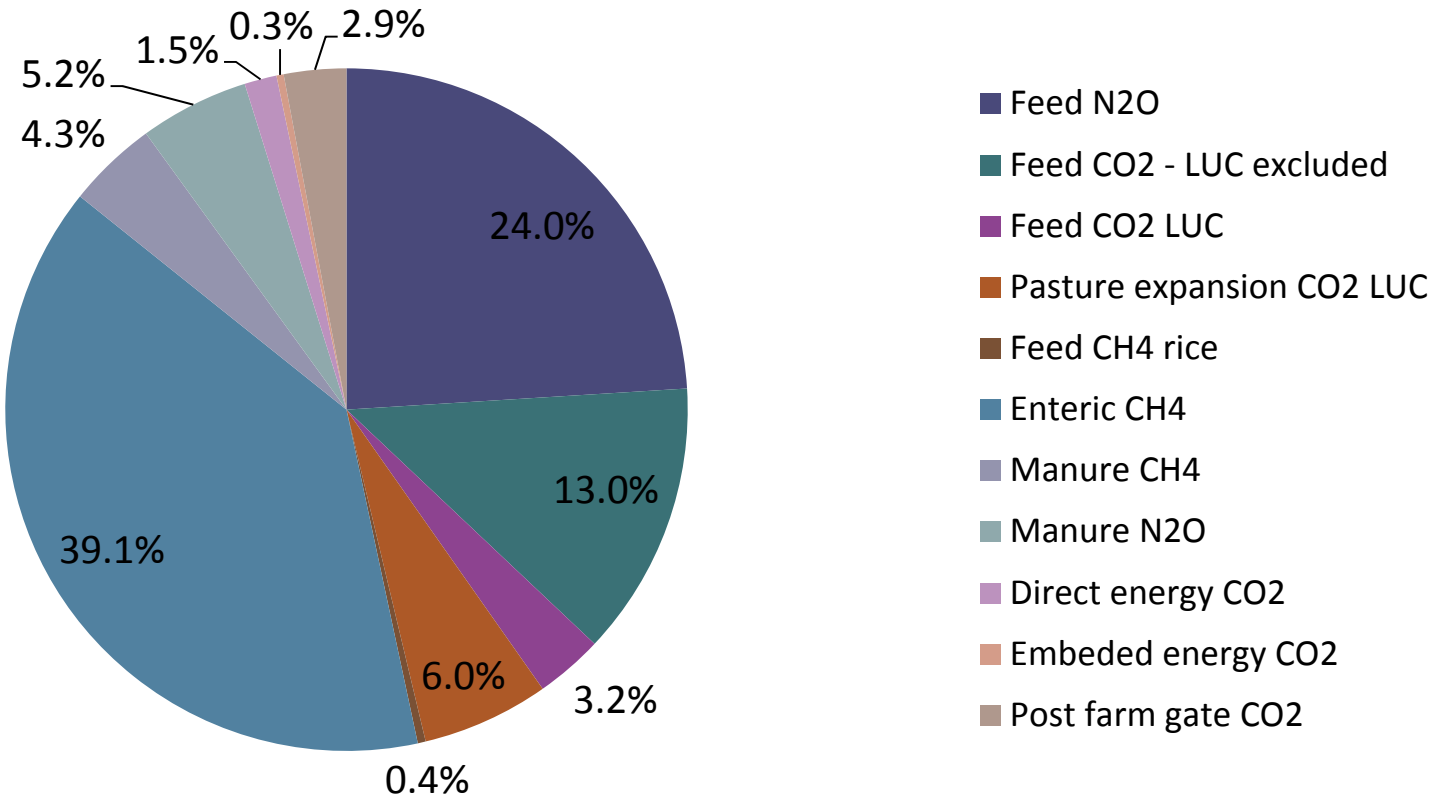
Total emissions : ca. 7.1 Gt CO_{2e} per year



Emission intensities (Ei)

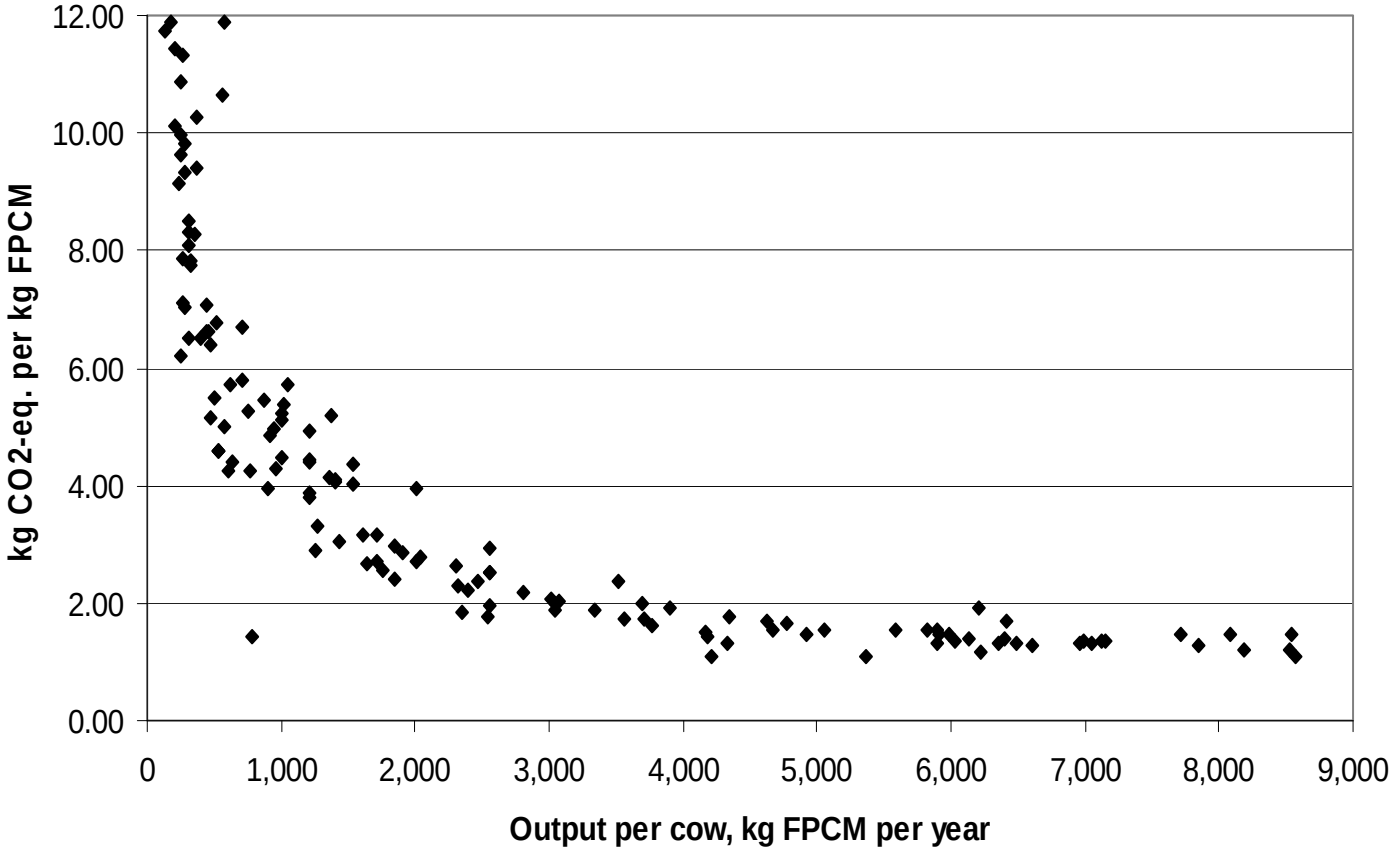


Global emissions from livestock supply chains, by category of emissions (includes emissions to edible products as well as to other goods and services, such as draft power and wool)



- Feed production and processing: 45 percent of emissions
- Enteric methane (39 pc) > feed fertilization (24 pc) > energy (17 pc) > manure management (10 pc) <=> land use change (9 pc)

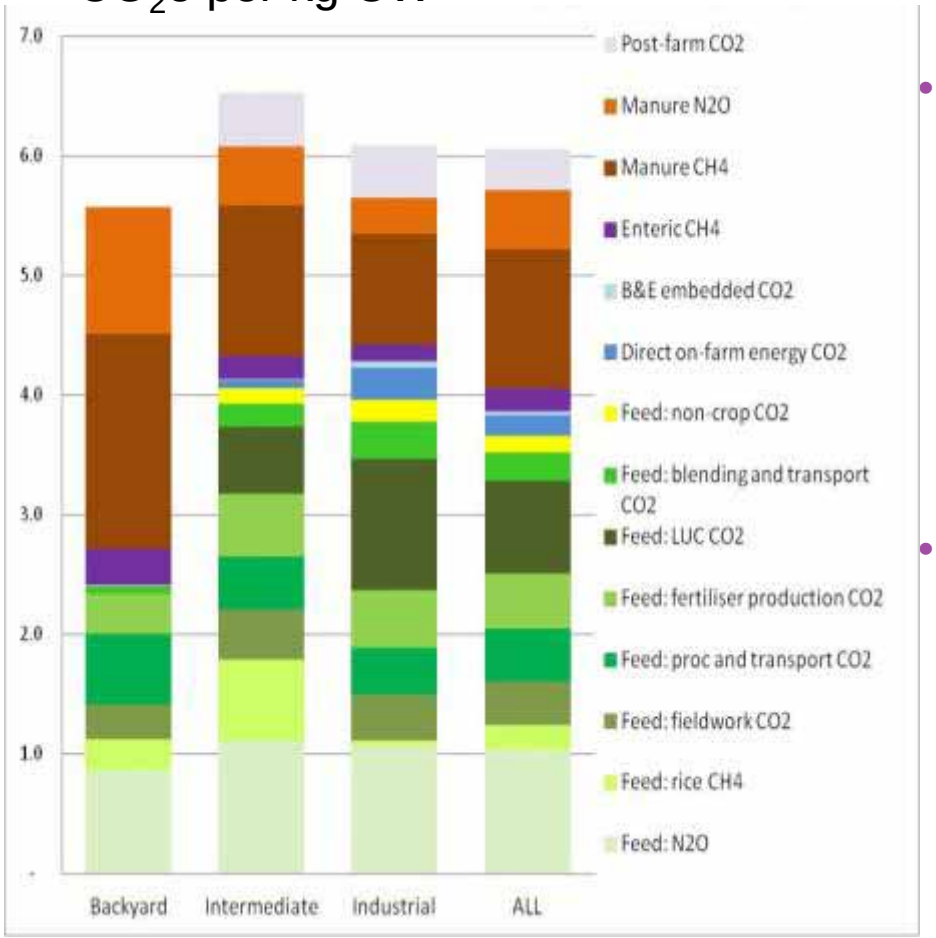
Relationship between total greenhouse gas emissions and milk output per cow



Gerber et al., 2011

Variation in emissions intensity by system Pig production

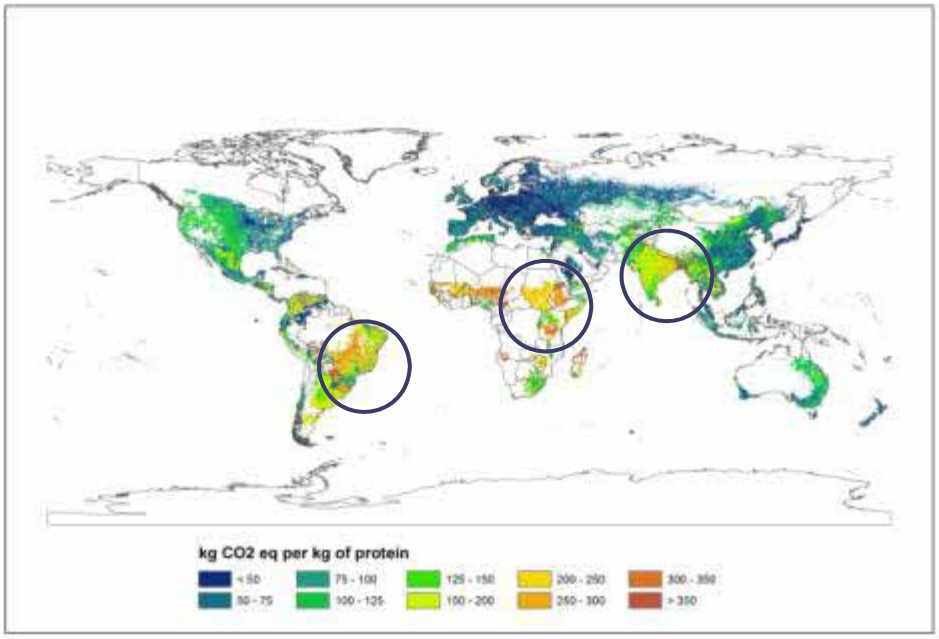
CO_2e per kg CW



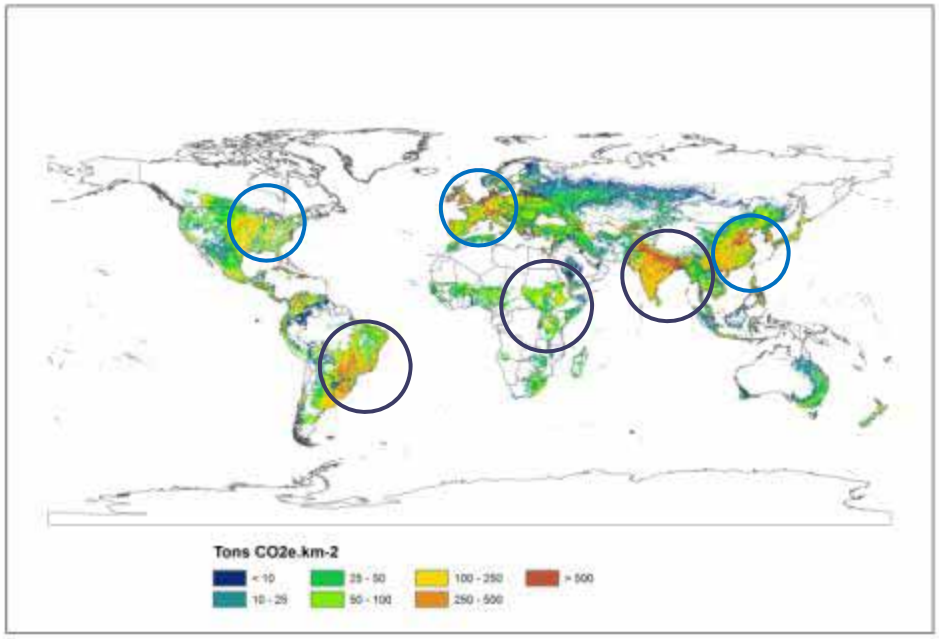
- Backyard – highest on-farm emissions, but lowest overall EI - why?
  - Low FCR, low digestibility of the ration>high VS and N excretion
  - Feed CO2e low due to: no LUC, post-farm, direct or embedded energy, and greater use of swill and waste crops
- Why is intermediate higher than industrial?
  - Lower FCR
  - Lower digestibility ration
  - Lot of rice

Global maps of emissions intensity, per unit of product and land area.

(Areas with animal protein production lesser than 75 kg per square km are not displayed).

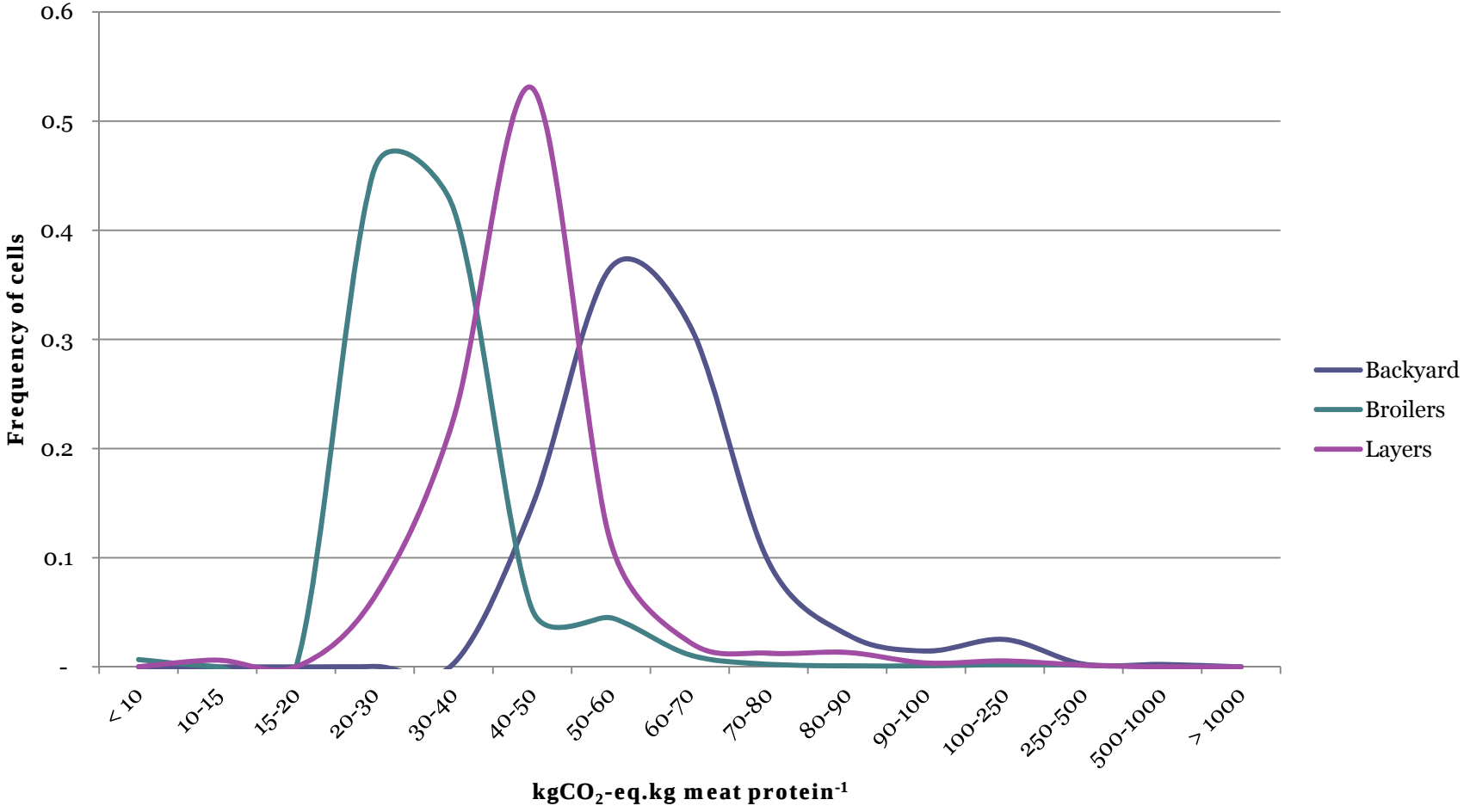


Emission intensity per unit of product



Emission intensity per land area

Emission intensity gap – chicken meat in east and south-east asia



How and by how much can we mitigate emissions?

GHG emissions are losses

- Methane
  - CH_4 emissions are energy losses
  - Total enteric methane emissions : equivalent to 144 Mt oil equivalent per year
  - Total manure methane emissions: equivalent to 29 Mt oil equivalent per year

- Nitrous oxide
  - N_2O losses are N losses from manure and fertilizers
  - Manure N_2O emissions (direct and indirect) from manure application on crops and application on pasture: 3.2 Mt of N

- Carbon dioxide
  - CO_2 emissions are related to fossil fuel use and organic matter losses
  - Energy use efficiency can be improved in many systems
  - Soil organic matter is key to land productivity

➢ There is a strong link between Ei and resource use efficiency

Mitigation potential (i)

Approach:

1. Statistical analysis of emission intensity gaps
2. Case studies in selected regions/farming systems
3. Modeling of potential soil C sequestration

Mitigation potential (ii)

- Statistical analysis: mitigation potential of ca. 30 percent
- Case studies: mitigation potential of 10 to 45 percent.
- Soil carbon sequestration: 0.4 to 0.6 Gt, often resulting in an increased production of grass (ca. 7 percent of baseline emissions)
  - Mitigation potential exists for all species, systems and regions,
  - System change is not require to mitigate emissions
  - Strong correlation between mitigation and productivity gains, especially among ruminant systems operating at low productivity

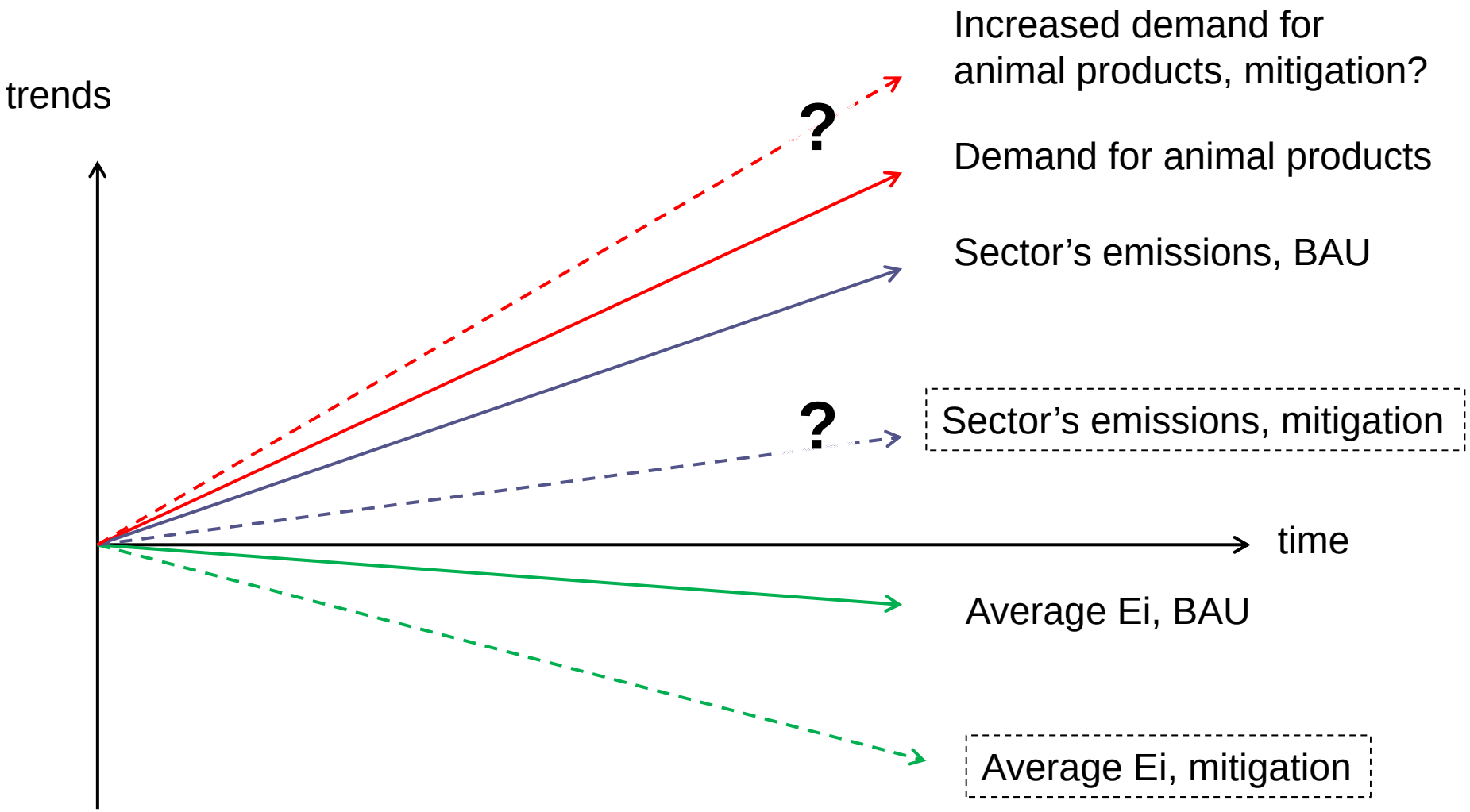
What are the main strategies for the reduction of emission intensities?

- Ruminants
  - *animal level:* feed digestibility and balancing, health, genetics
  - *herd level:* maintenance to production ratio
  - *production unit level:* grazing management
  - *supply chain level:* energy use efficiency, waste minimization and recycling
- Monogastrics
  - *animal level:* feed balancing, health, genetics
  - *production unit level:* source low Ei feed and energy
  - *supply chain level:* energy use efficiency, waste minimization and recycling

What is required to reduce emission intensities ?

- Foster the adoption of available, efficient production practices (genetics, animal health, feed, building and equipment)
  - technology transfer :awareness raising, access to capital and information
  - tailored technical itineraries
  - incentives where required
- Foster the sourcing low Ei inputs
  - price emissions
  - market premiums for low Ei products
- Move the Ei frontier
  - research and development (e.g. Ei gap assessment, technology break through)

Emission intensities or net emissions?



Concluding remarks

- First global and disaggregated assessment of GHG emissions associated with animal food chains
  - overall emissions amount to ca. 7.1 Gt, 14.5 percent of global anthropogenic emissions
  - mostly from cattle, products from ruminant species have greater Ei
  - important role of feed emissions, low post harvest emissions
  - strong heterogeneity, even within production system

- Bridging the efficiency gap provides substantial mitigation potential (1/3rd)
- Additional mitigation from C sequestration (ca. 0.4 to 0.6 Gt)

- This is V1.0, there is ample scope for improvement and development of GLEAM
- Yet provides insights to guide mitigation interventions

- Reports to be released this spring

Ministerie van Economische Zaken

WAGENINGEN UR
For quality of life

Internationale kansen bij verduurzaming van de veehouderij

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

The Golden Triangle at Global Scale

private sector contribution to sustainable intensification

Martin C. Th. Scholten; 7 May 2013

WAGENINGEN UR
For quality of life

Proven concept: Innovation by Cooperation

Government

Private Sector

Research & Education

WAGENINGEN UR
For quality of life

High Value Netherlands Livestock Sector

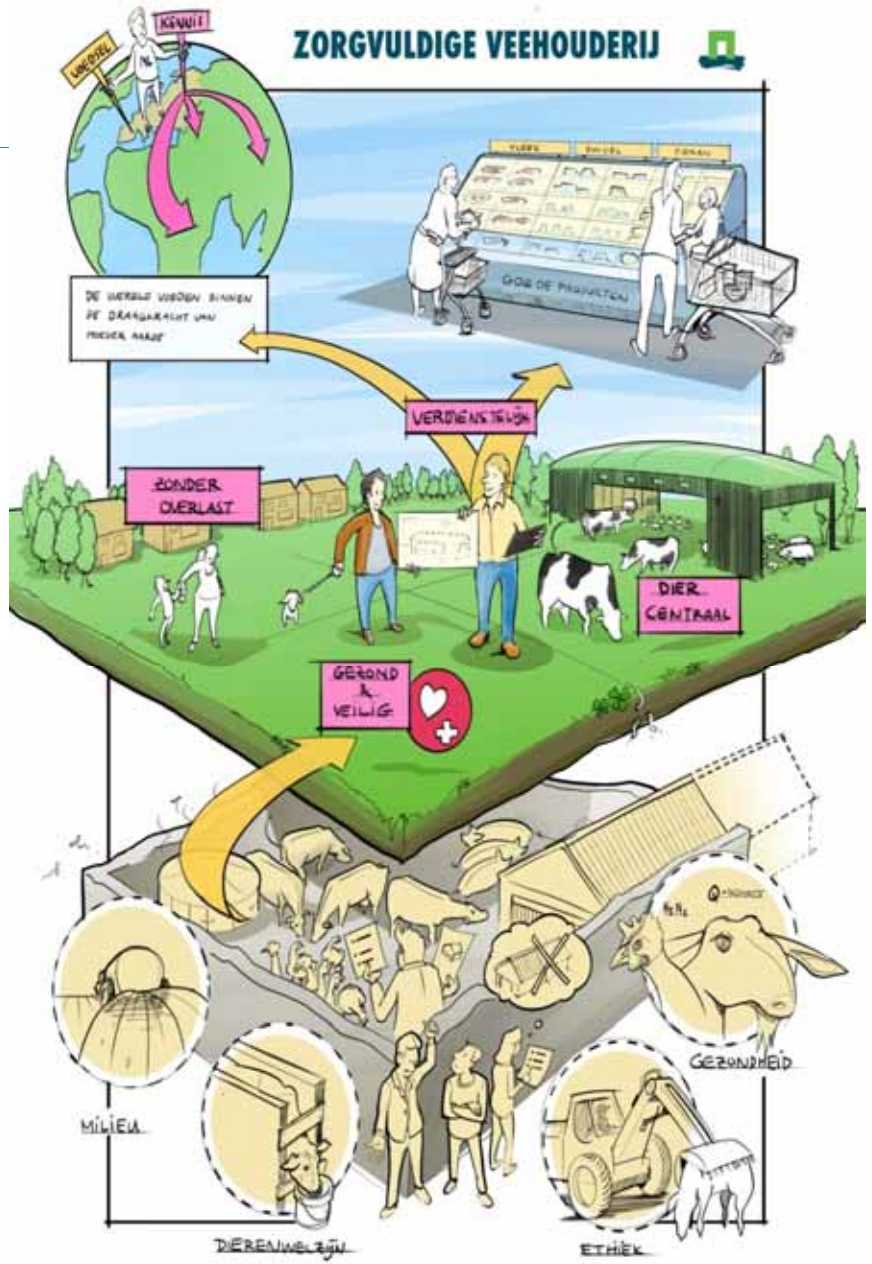
Traditionally efficient and innovative:

- smart breeding,
- customized feed,
- modern housing,
- animal welfare,
- Quality control

But also criticized

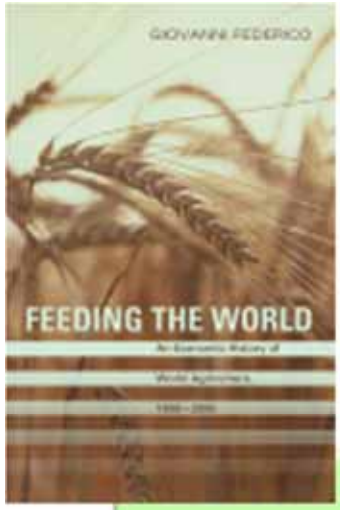
WAGENINGEN UR
For quality of life

National Perspective



WAGENINGEN UR
For quality of life

Global Perspective



Feeding the world
within the carrying capacity
of planet earth

2 x 2

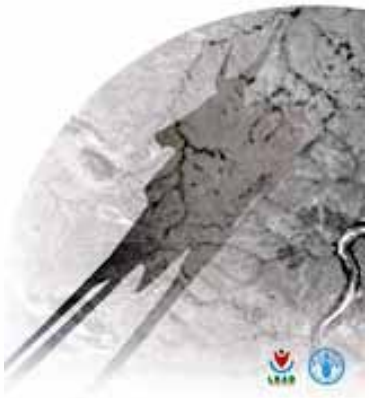
- Doubling Production
- Halving Ecological Footprint

WAGENINGEN UR
For quality of life

Prospects of World Animal Production 2050

1500 MT feed

200 MT fish



435 MT meat

845 MT dairy

WAGENINGEN UR
For quality of life

Proven concept: Innovation by Cooperation

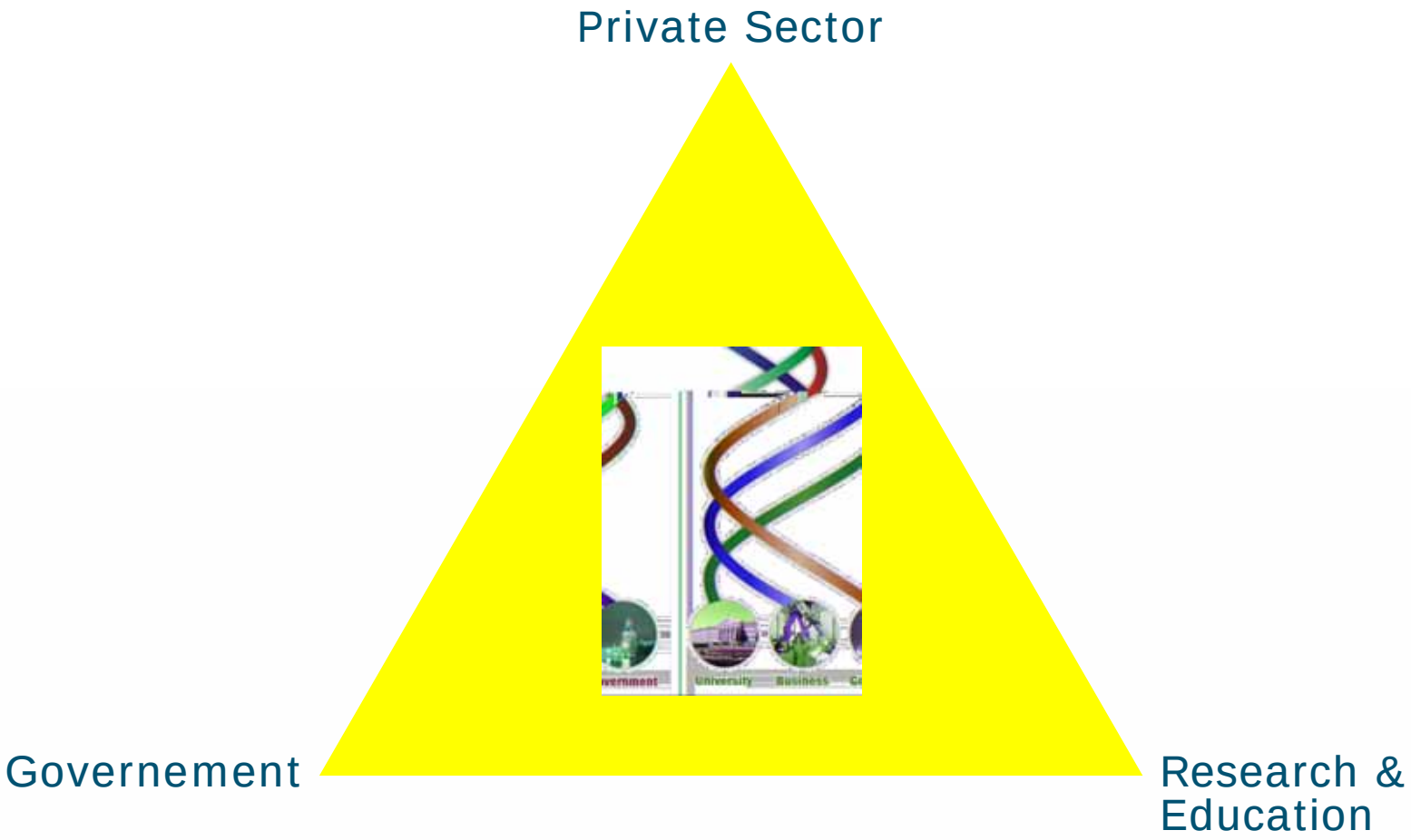
Government

Private Sector

Research & Education

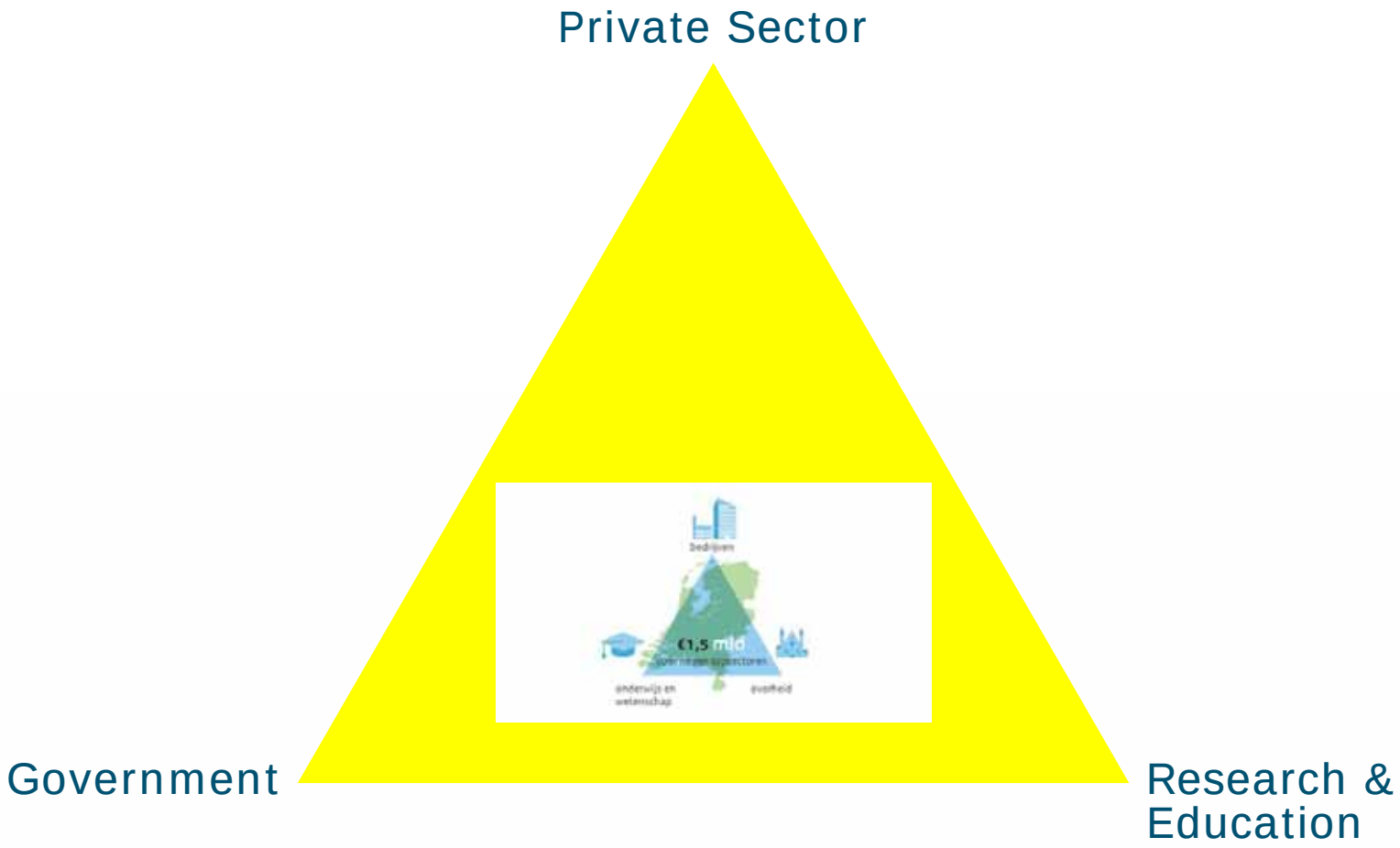
WAGENINGEN UR
For quality of life

Now: The Triple Helix towards Innovation



WAGENINGEN UR
For quality of life

Innovation by Cooperation: Netherlands



WAGENINGEN UR
For quality of life

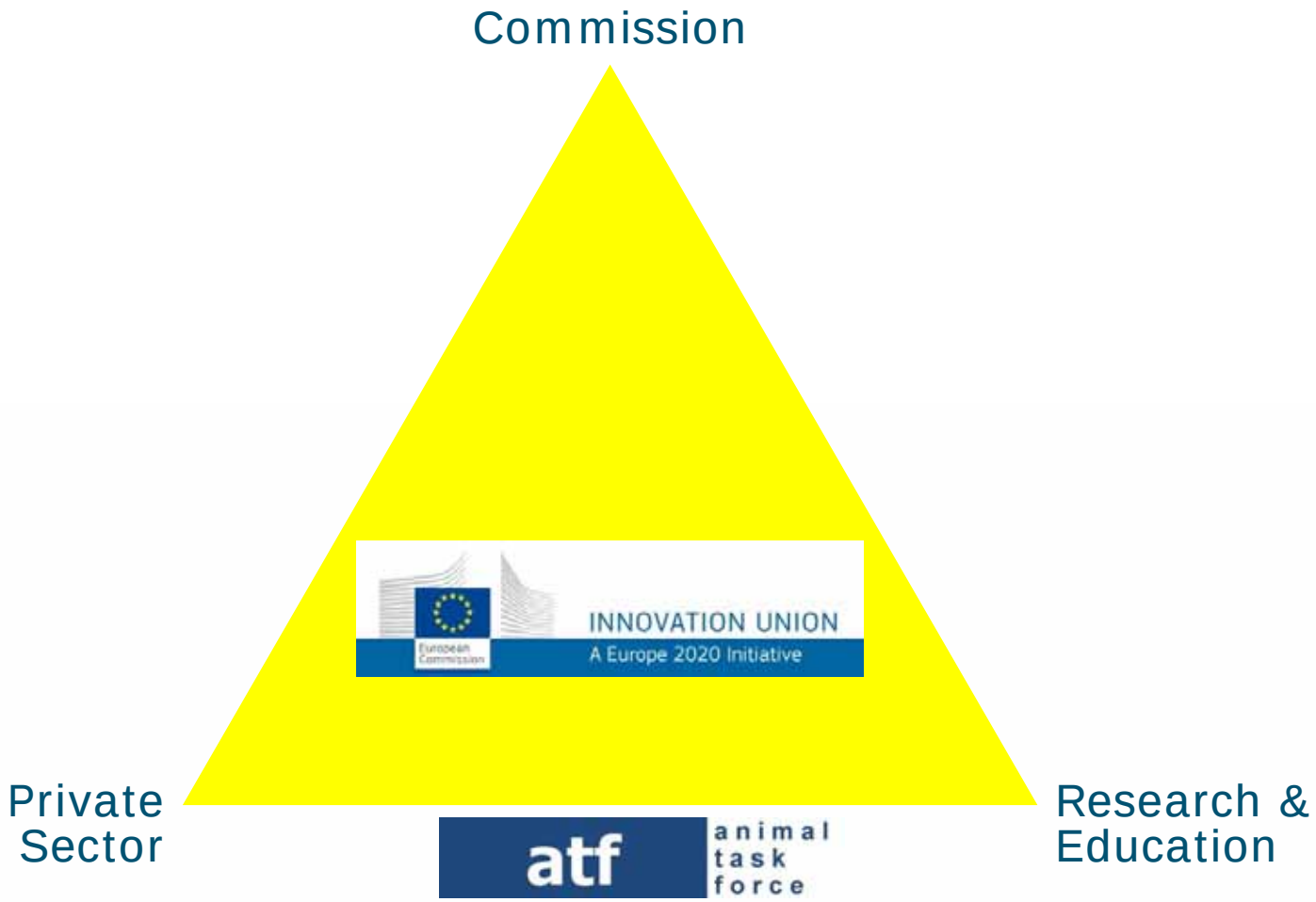
PP-Partnerships Livestock Topsector

- Feed4Foodure
- Breed4Food
- One Health4Food

- Sustainable Dairy Chain / *Dairy Campus*
- Pigs4Food / *Pig Innovation Centre*
- Poultry4Food / *Pi²*
- VealS4Food

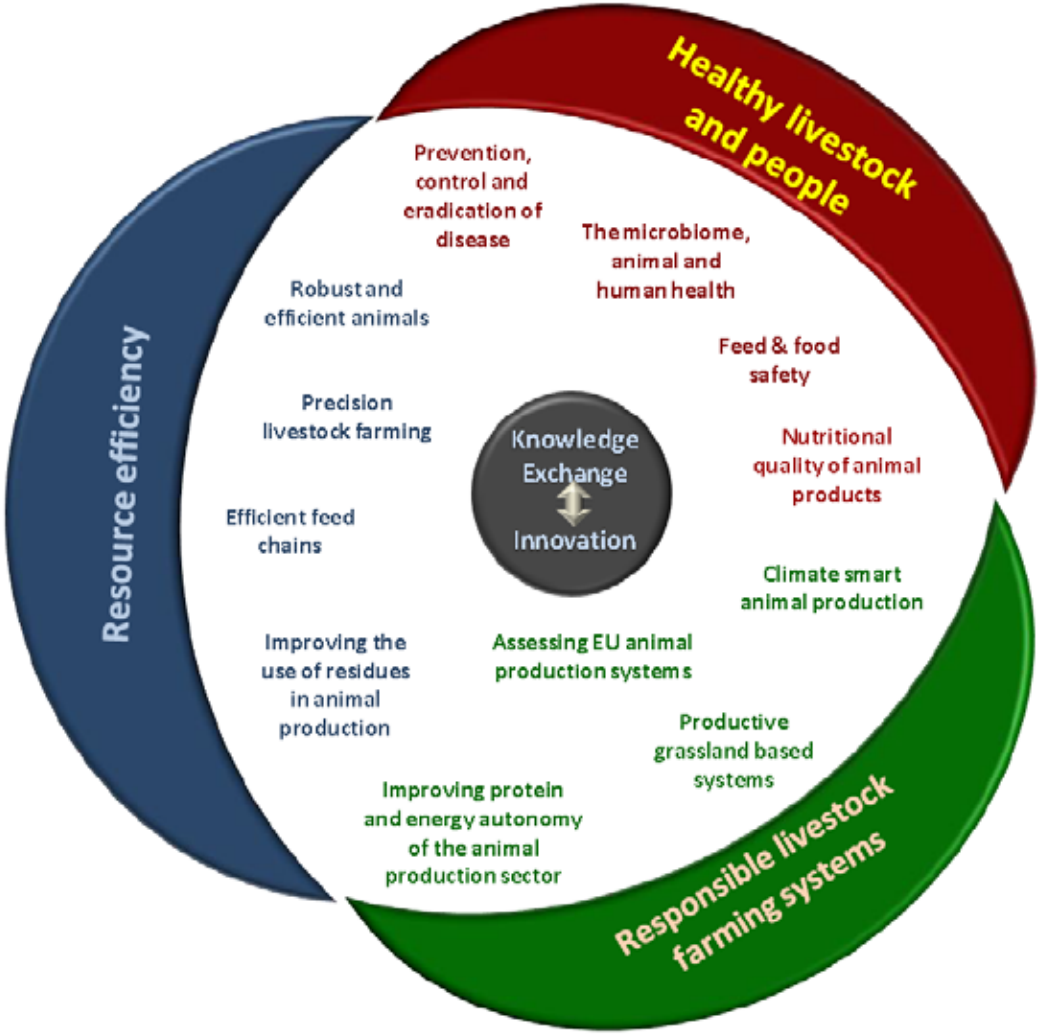
WAGENINGEN UR
For quality of life

Innovation by Cooperation: Europe



WAGENINGEN UR
For quality of life

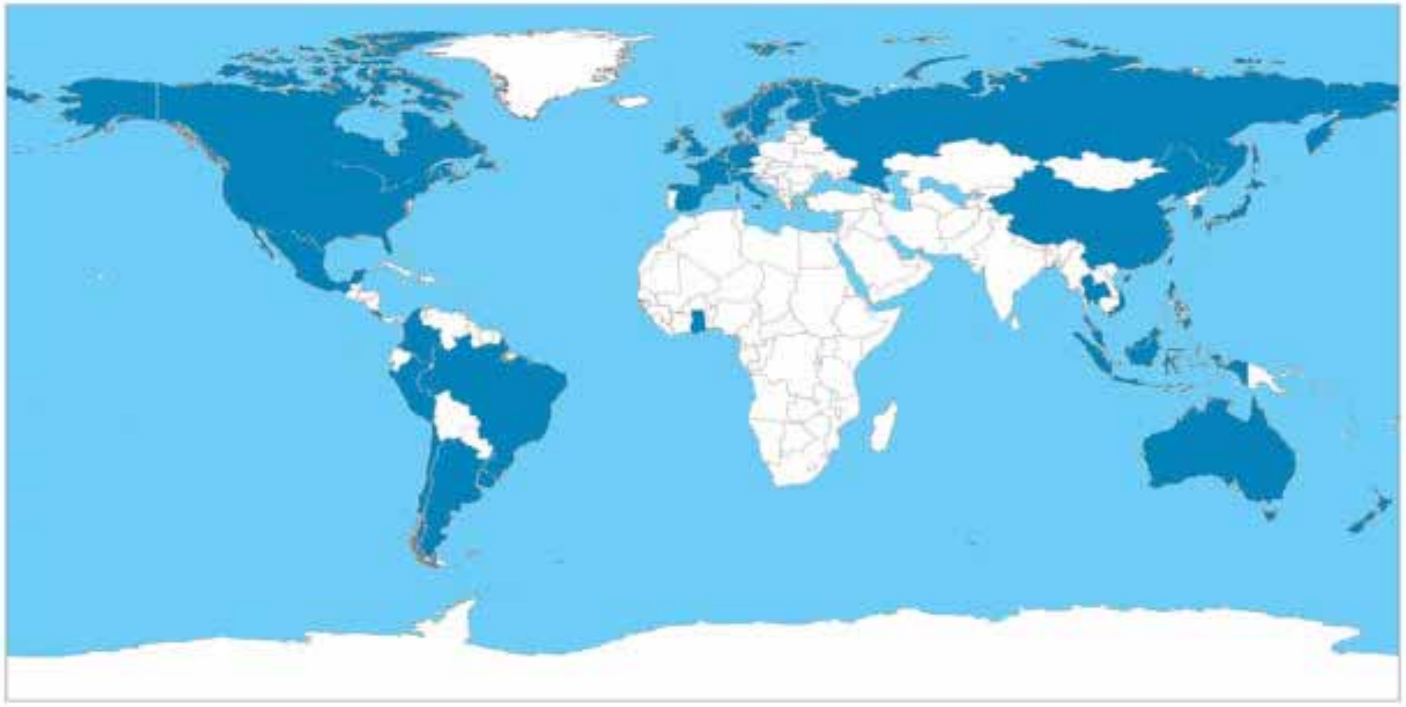
Animal Task Force priorities



WAGENINGEN UR
For quality of life

Innovation by Cooperation: Global Scale

Global Research Alliance on Greenhouse Gases



33 Countries are Members of the Global Research Alliance

WAGENINGEN UR
For quality of life

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

Global Research Alliance: Vision

Increase agriculture production with lower emissions

Feeding the world while caring for the environment

Improve global cooperation in research

Accelerate/strengthen knowledge and technology development that would not happen without the Alliance, with a common research agenda, joint capacity building

Work with farmers and partners to provide knowledge

Develop relevant mitigation options while increasing the resilience of food production systems

Research Groups

Livestoc ar up

Croplan ea up

Paddy F se oup

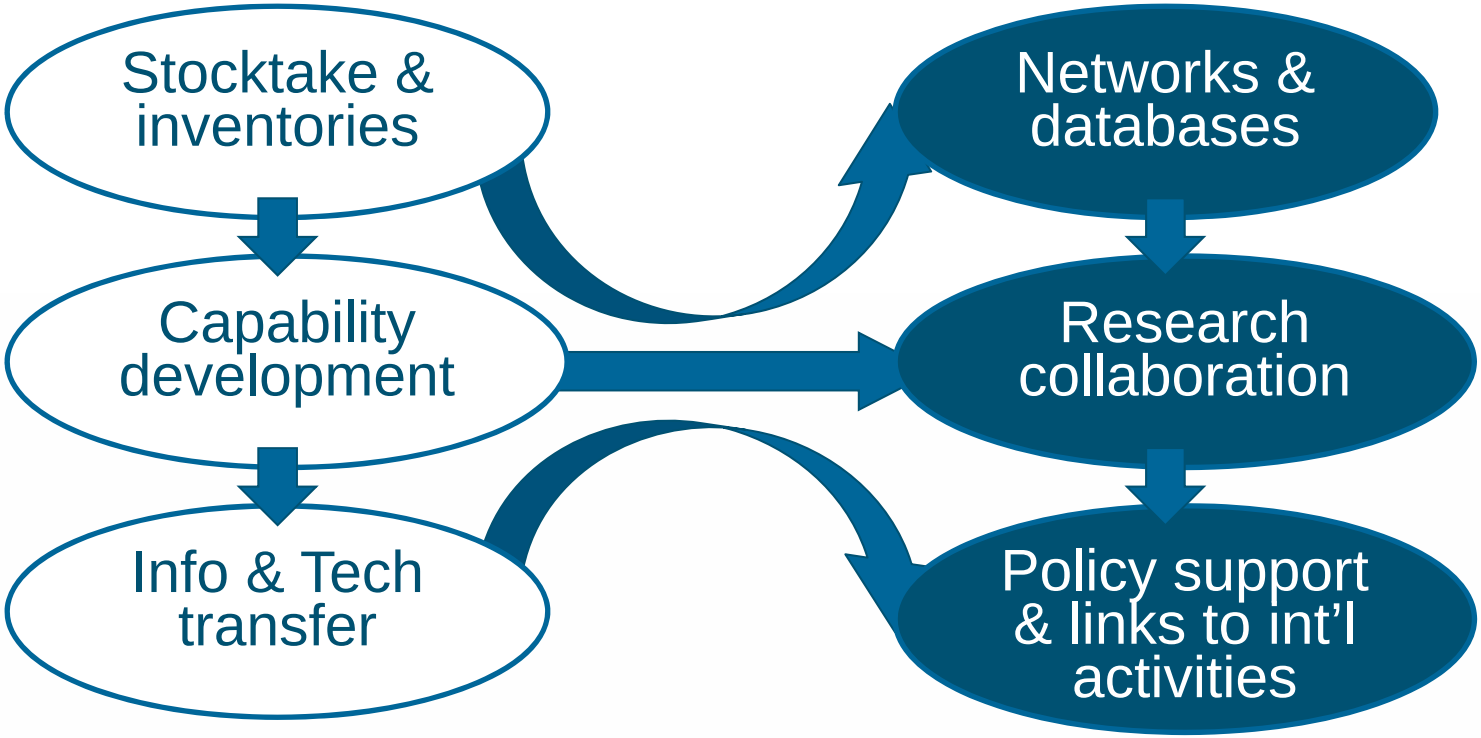
Inventory and Measurement

Soil Carbon and Nitrogen Cycling

WAGENINGE
For quality

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

From stocktake toward scientific support to policies and sector



WAGENINGEN UR
For quality of life

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

Progress to date

- Acceleration and strengthening global cooperation in research focused on diverse agricultural practices

✓**Collaborative Research Projects**

✓**Research Networks**

✓**Joint funding initiatives**

✓**Data sharing opportunities**

✓**Information and Technology Transfer**

✓**Developing synergies with other organisations**

✓**Capability Development**

Livestock Research Group actions

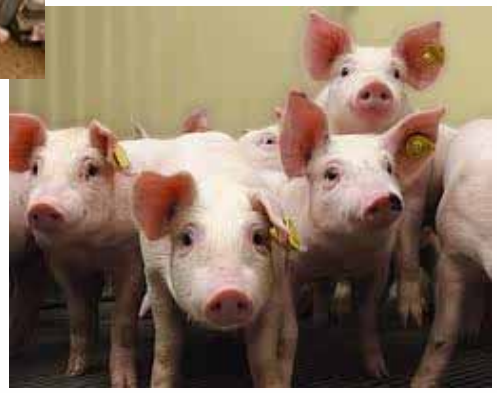
- Research Networks: **manure management**; rumen; feed & nutrition; selection; health; grasslands
- Capability Development Workshops: SE-Asia, S-America, W & E Africa; E-Europe; C-America
- 10 Collaborative Research Projects
- 5 Best Practice Guides on methodologies
- Synergies with other organisations: FAO, EU, SAI, IMS, IDF, Dev. Banks, CGIAR/ILRI, CCAC,
- Joint funding initiatives: NZ, JPI, Fontagro

Innovative Leadership

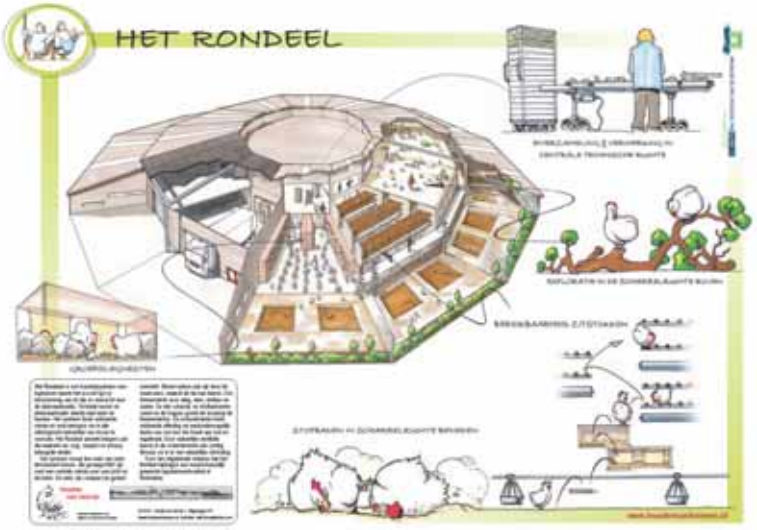
POULTRY CENTRE · THE NETHERLANDS ·

VanDrie Group
CONTROLLED QUALITY VEAL

Dairy Training Centre



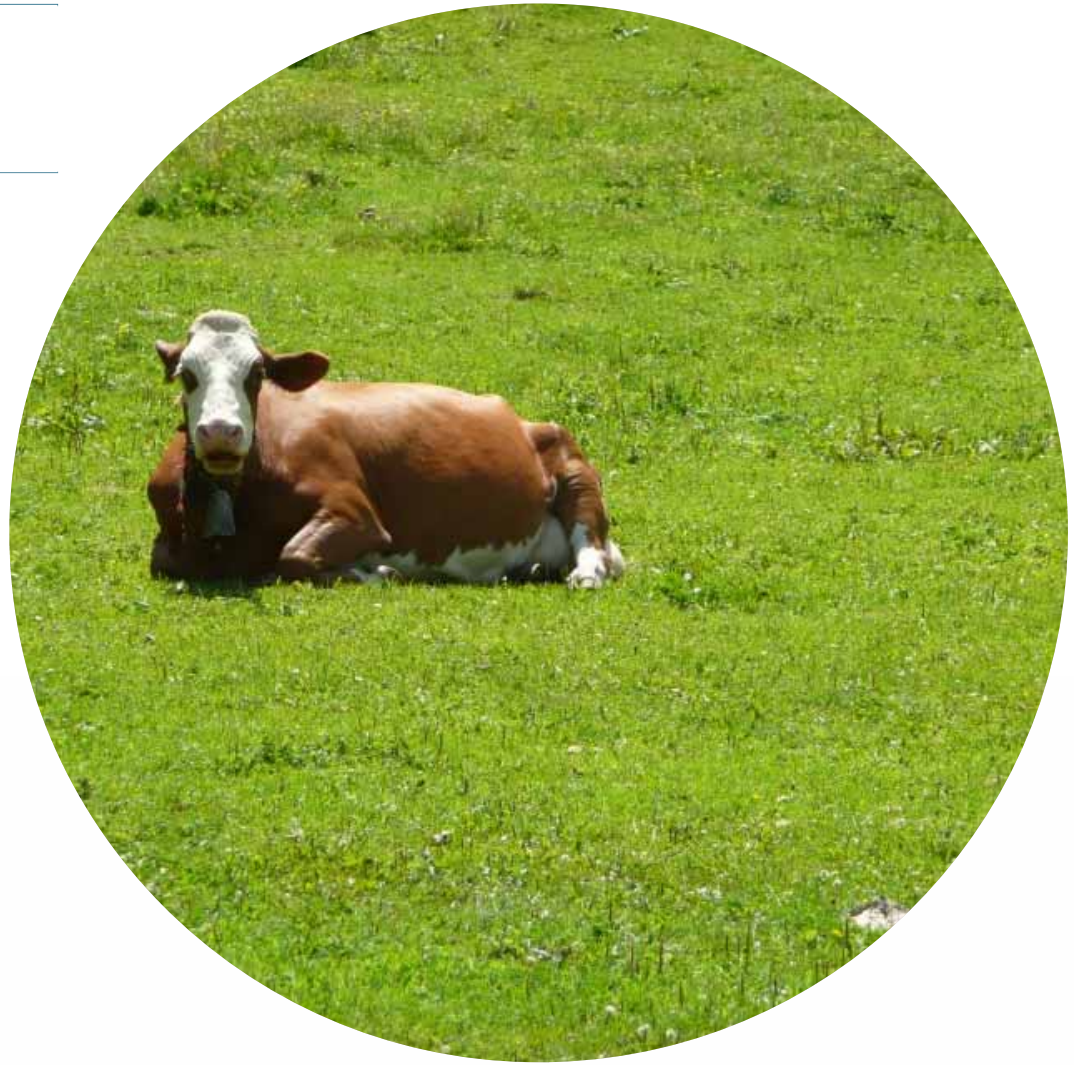
FrieslandCampina



WAGENINGEN UR
For quality of life

Noblesse oblige

How to further include our sector in the global initiatives?



WAGENINGEN UR
For quality of life

Ministerie van Economische Zaken

WAGENINGEN UR
For quality of life

Internationale kansen bij verduurzaming van de veehouderij

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

Ministerie van Economische Zaken

WAGENINGEN UR
For quality of life

Visie EZ op versterken Nederlandse positie in mondiale speelveld veehouderij

Roald Lapperre,
plv Directeur-Generaal AGRO min EZ

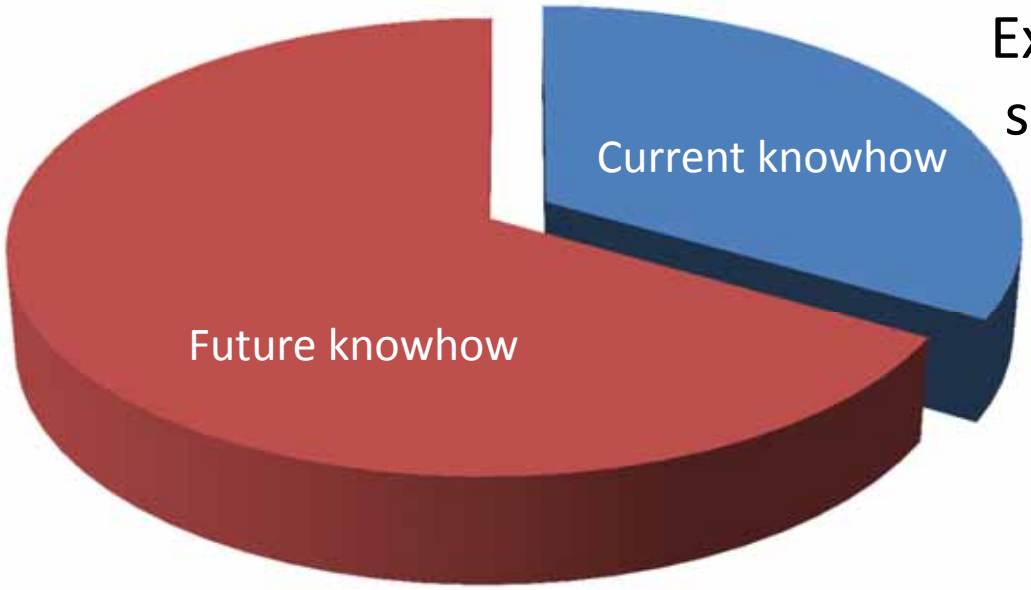
GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES

the *total* feed business

A feed perspective

Dr.ir. Leon Marchal
Director Nutrition Innovation Centre
ForFarmers

What needs to be done?



Export of responsible sustainable intensification

Innovations needed

Technical & Social

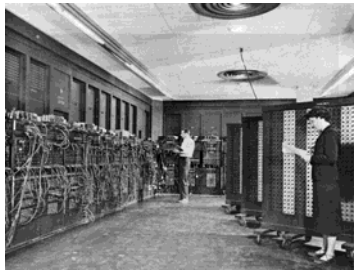
Export of sustainable intensification

- Export of sustainable produced food products
- Export of feedstock and ingredients + knowhow
- Export of knowhow (i.e. contracts)
- Set up local production
- Incentives on sustainable produced crops (i.e. soy, palm,melasse)

Innovations needed - Drivers for change

Driver
Technology
Legislation
Consumer demand / acceptance

Output
Cost reduction
Safer / cleaner
Better (Consumer benefit)



Drivers for change – Animal protein

Driver
Technology
Legislation
Consumer demand / acceptance

Output
Cost reduction
Safer / cleaner
Better (Consumer benefit)

Was main focus

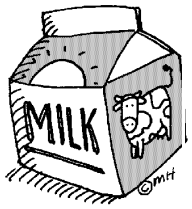
Should be more future focus

Hard to distinguish

Small % premium products and mainly on animal welfare issues

Small % can absorb additional sustainability costs

A look at animal protein

				
NL protein consumption	42%	50%	3%	0%
Feed conversion [ds feed / kg carcass]	0,8	 4,5-8	 2,3	 1,5	2,1	Medium - good
Protein conversion [CP carcass, milk, egg / CP feed]	25-33%	 9%-24%	 19%	 37%	35%	Medium - good
Human consumable / non consumable	++	++	+	+	+	++/+++

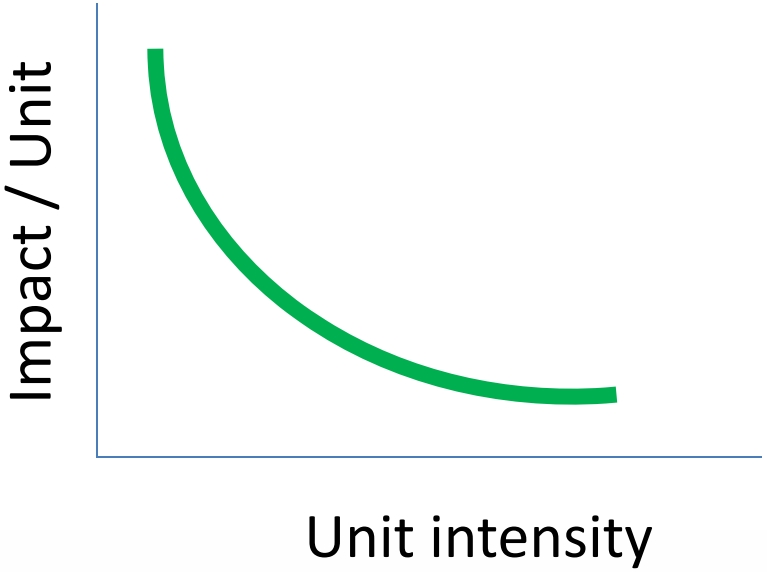
Sustainable intensification – further steps

1) Individual feeding of an animal

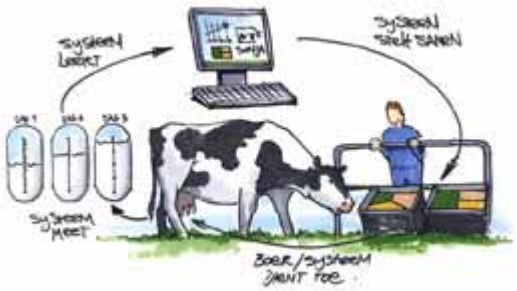
2) Land management

3) “New” animals

4) “New” crops

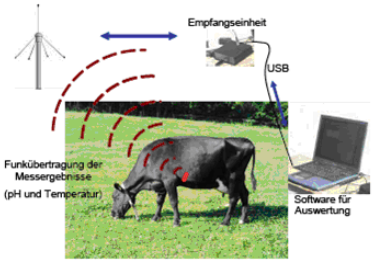


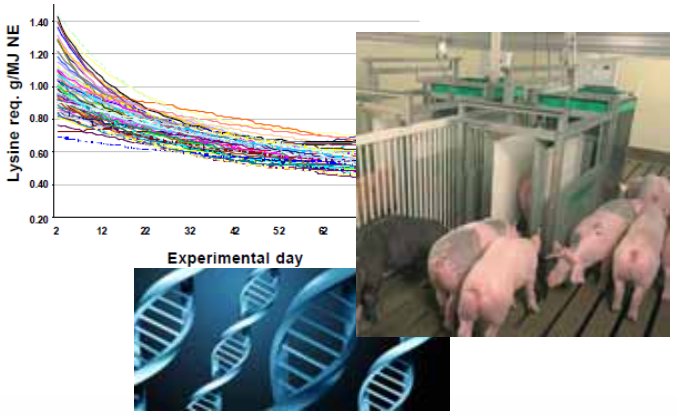
Sustainable intensification – customized feeding



Dynamic Feeding

Rumen pH





Feeding to individual (genetic) potential

AGROVISION

for farmers Hendrix

de heus

agrifirm

AgruniekRijnvallei

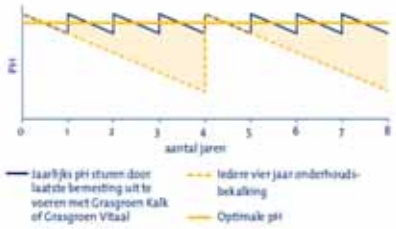
ANIMAL SCIENCES GROUP WAGENINGEN UR

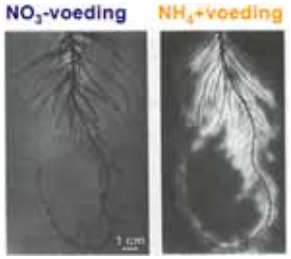
Sikma VEEVOEDERS

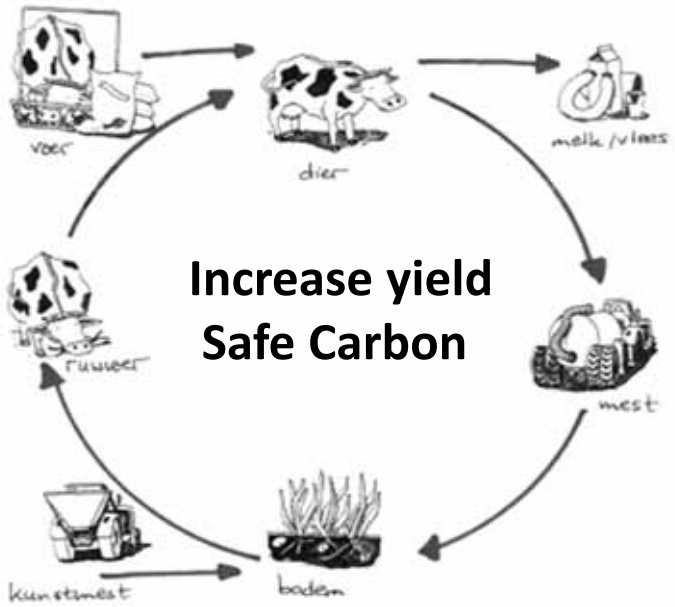
provincie Overijssel

for farmers the total feed business

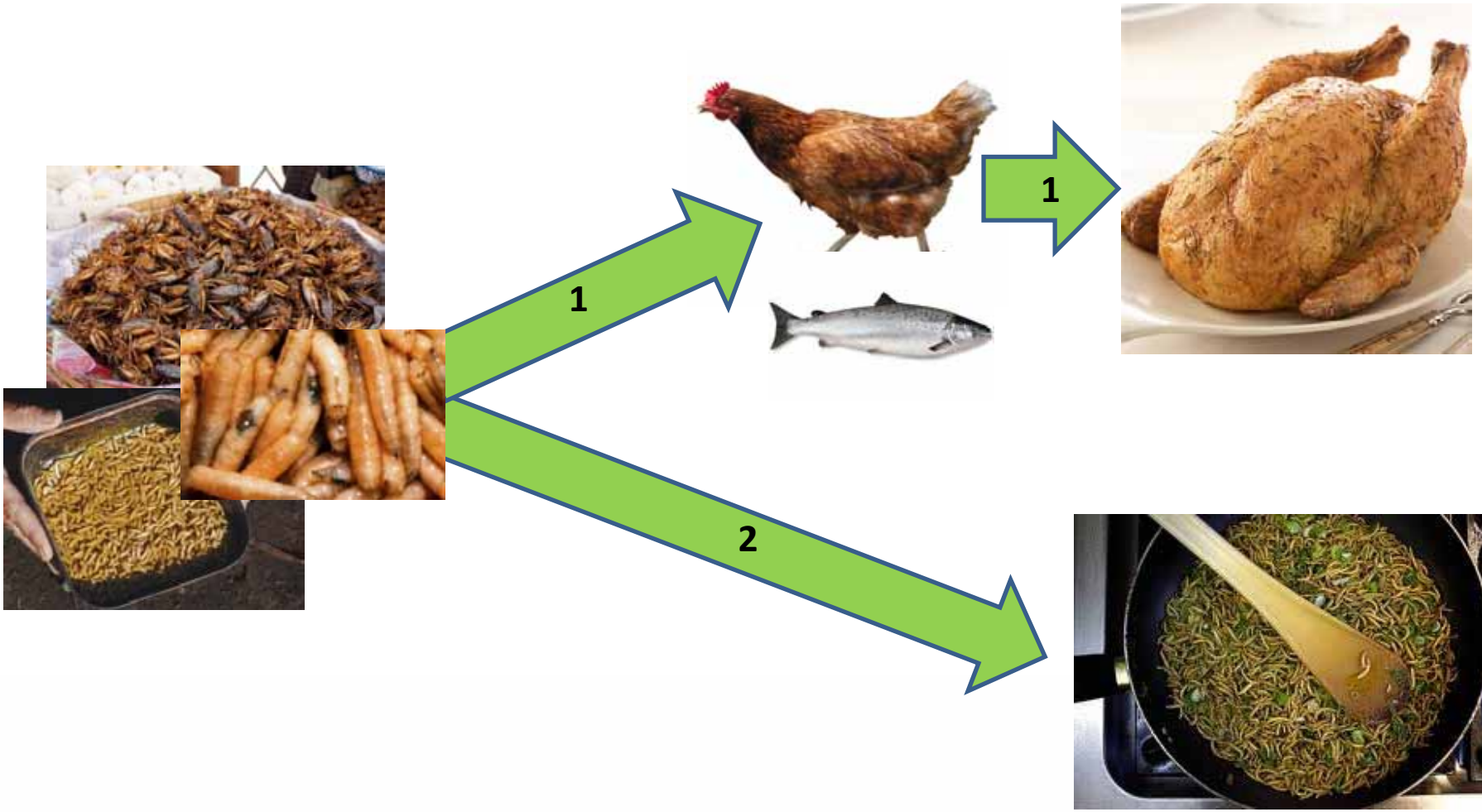
Sustainable intensification - Land management





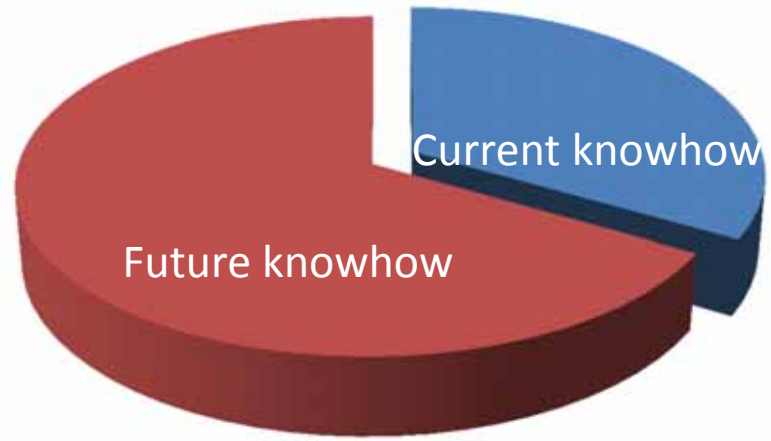


Sustainable intensification – “new” animals



Sustainable intensification – “new” Crops

Aqua culture: i.e. duckweed
38% CP, 20-25 ton ds per ha
Very efficient nutrient uptake
Part of manure treatment



A chance for  export of responsible sustainable intensification

Leon.marchal@forfarmers.eu

FrieslandCampina



The FrieslandCampina sustainability program

Value creation with a sustainable dairy chain

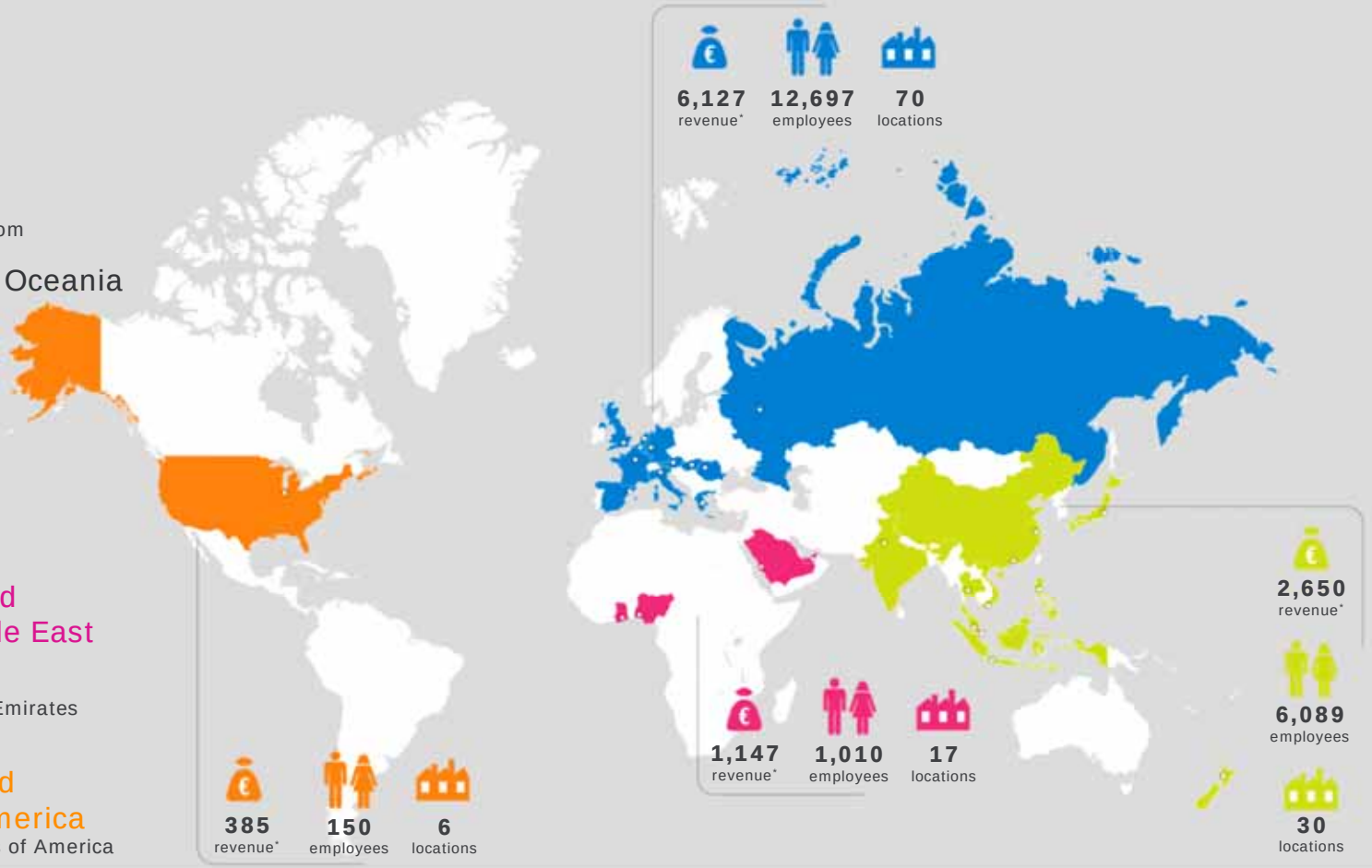
Worldwide

Europe
Netherlands
Germany
Belgium
Greece
Hungary
Romania
Russia
France
Spain
Italy
Austria
United Kingdom

Asia and Oceania
Indonesia
Malaysia
Singapore
Thailand
Vietnam
Philippines
China
Hong Kong
India
Japan
New Zealand

Africa and the Middle East
Nigeria
Ghana
United Arab Emirates
Saudi Arabia

North and South America
United States of America



* in millions of euros

route2020

Our strategy

Growth and value-creation

Aspiration

To help people move forward in life with natural dairy nutrition

To be the most attractive dairy company for member farmers

Value-drivers

Dairy-based beverages

Infant & toddler nutrition (B2B, B2C)

Branded cheese

Strongholds & geographic expansion

Foodservice in Europe

Basic products

Benefit platforms

Growth & development

Daily nutrition

Health & wellness

Functionality

Capabilities

Talent management

Milk valorisation

Innovation

Business model & cost focus

Foundation

Goodness of dairy

Chain advantages

Sustainability

The way we work

route2020

Key elements of the sustainability policy of FrieslandCampina, *theme Responsible Dairy Farming*

Health & Nutrition

Combating nutrient deficiency & obesity

company

Sustainable Value Chains

Improving resource utilisation

company

Dairy Development

Helping small farmers Asia, W-Africa

company

Responsible Dairy Farming

Setting the standard

cooperative

Responsible Dairy Farming:
4 modules and objectives

1. Energy and climate

Reduction of GHG with 30% between 1990 and 2020

2. Animal health and - wellness

Reduction of antibiotics

Mastitis/claw problems: at natural level

3. Biodiversity

Visible care for nature

Sustainable soy from 2015

Improved mineral balance

Our customers want to build on sustainable products

Unilever

Nestlé
Good Food, Good Life

DANONE

Maatschappelijk Verantwoord Ondernemen

Ahold en Albert Heijn

Ahold

sodexo

kraft foods

25% increase in sustainable sourced* agricultural commodities

100 million pound reduction in global packaging

15% less energy expended

Reduction in CO2 emissions

15% less water used in manufacturing

15% less waste in manufacturing

50 million mile reduction from transportation network

Together with our customers: Make the dairy products more sustainable

DeliXL Foodservice

Unilever

DANONE

Nestlé
Good Food, Good Life

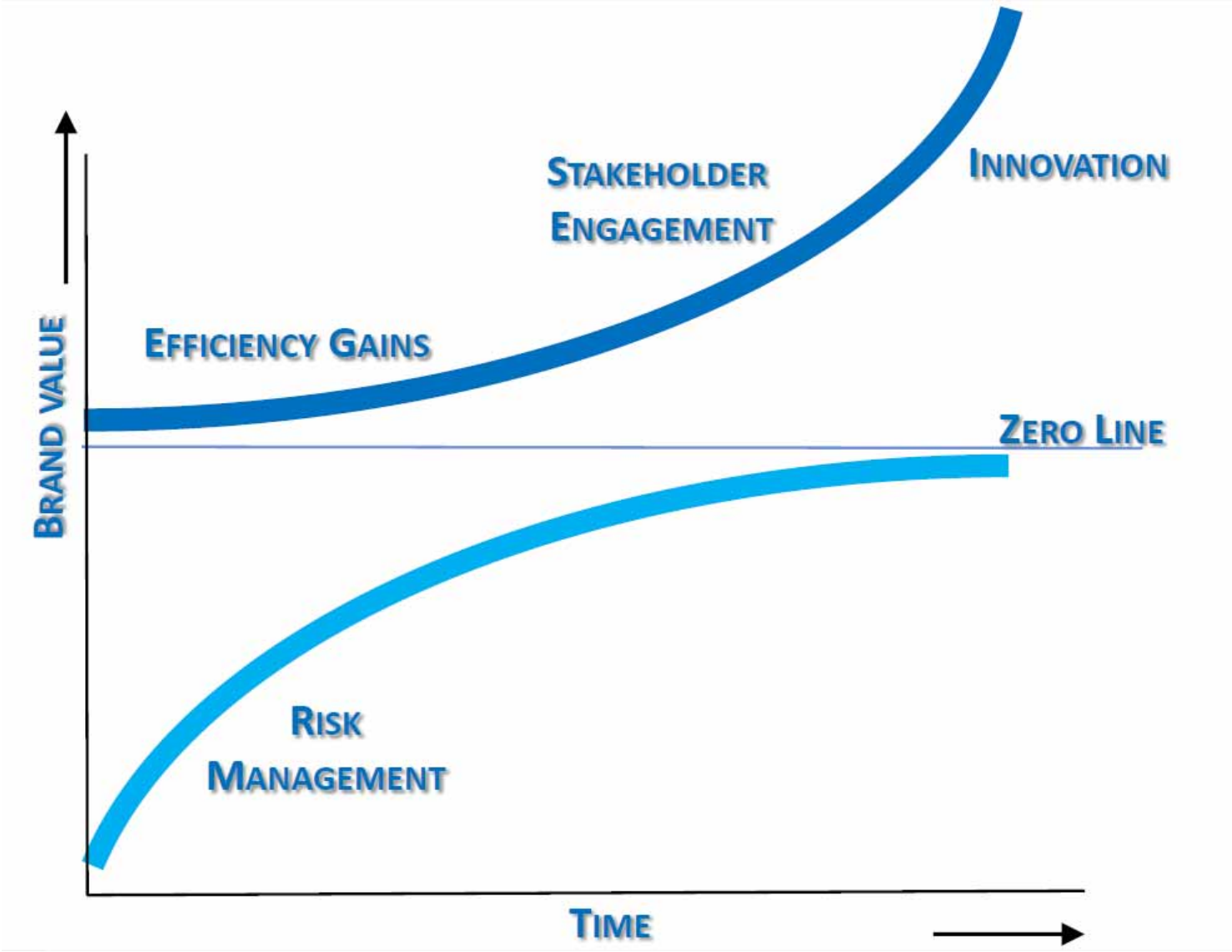
kraft foods

Ahold

sodexo

Mars

Road to value creation with sustainability

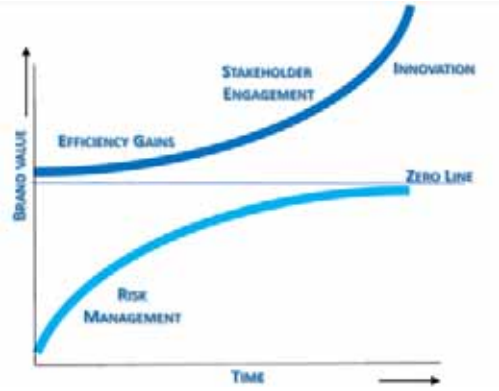


Some examples

Efficiency gains

Stakeholder engagement

Eco-innovation



FrieslandCampina

NATUUR & MILIEU

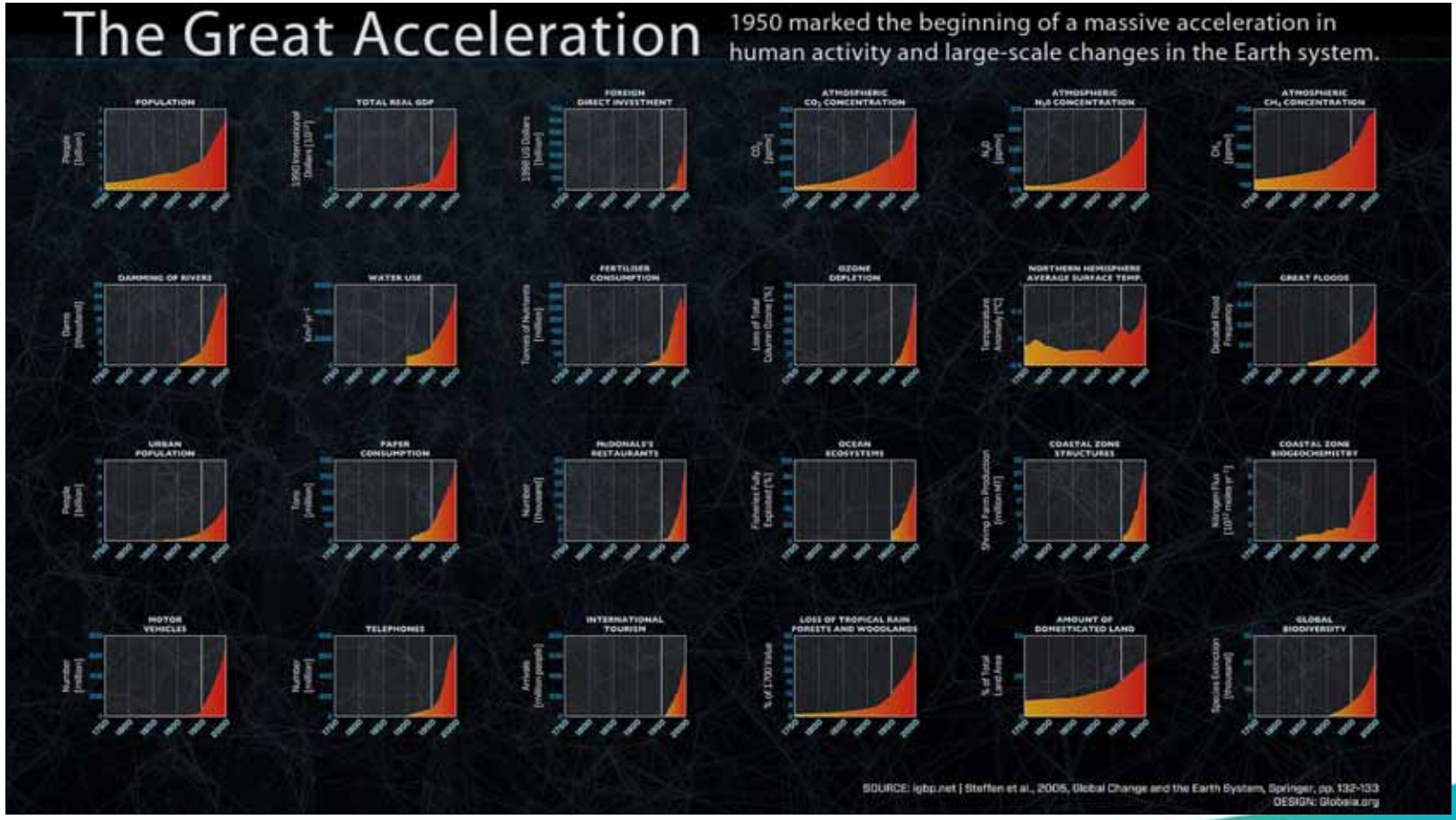
*The Netherlands as front runner in healthy & sustainable food **(?!)***

Onno van Eijk
Natuur & Milieu

Ede, 7 mei 2013


The road to the future

Road signs from the past

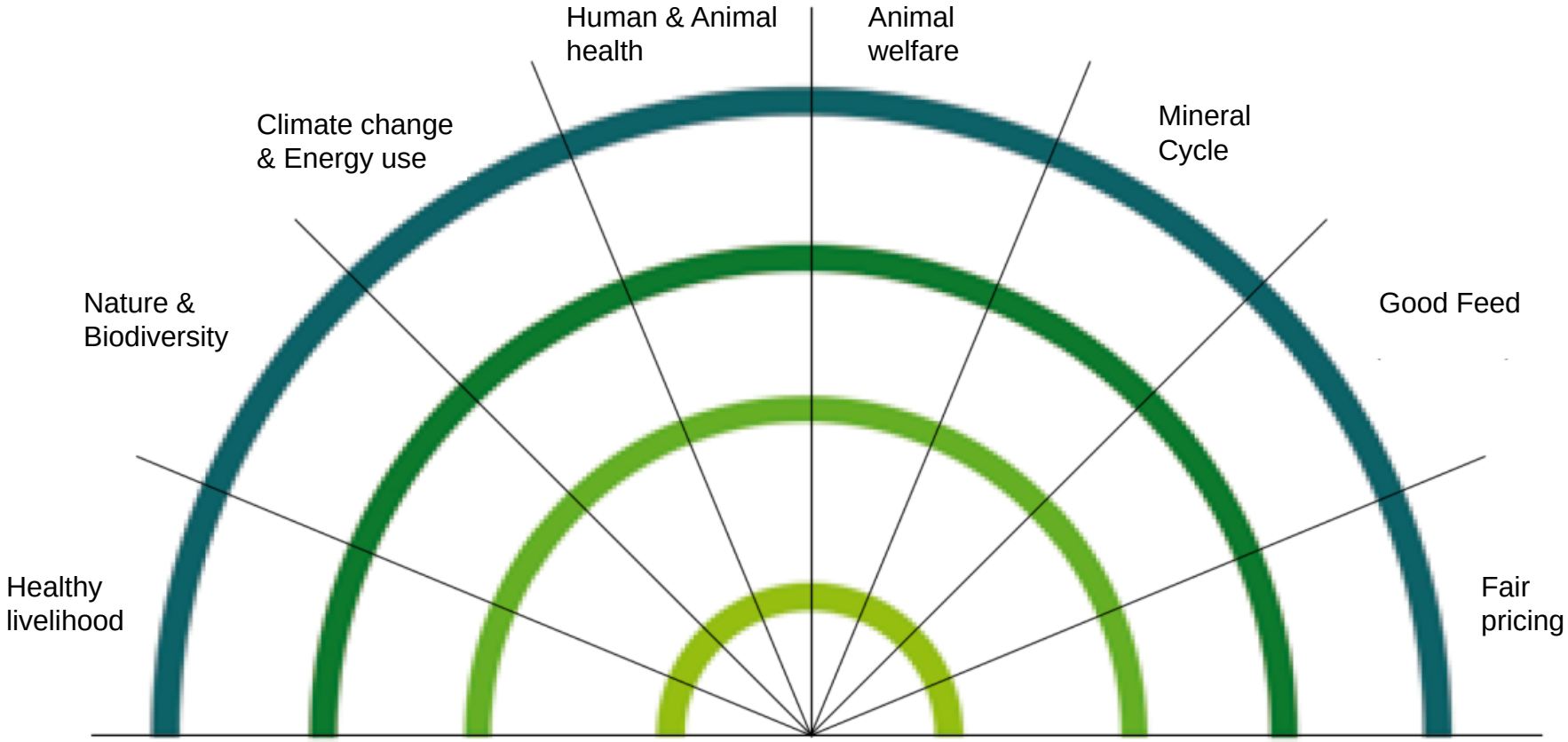


Five road signs for the future

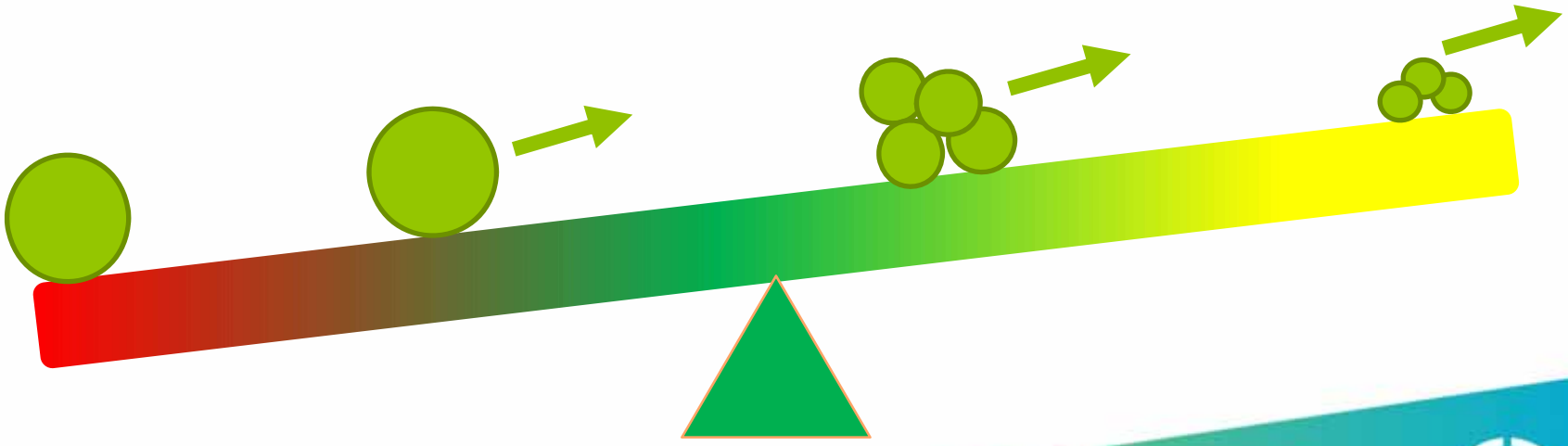
The Netherlands can be front runner in developing, testing and selling food solutions of the future,

If …….

1. Our future needs integrated sustainable solutions



2. leadership asks for active support of transition



3. Develop within the limits set by the environment

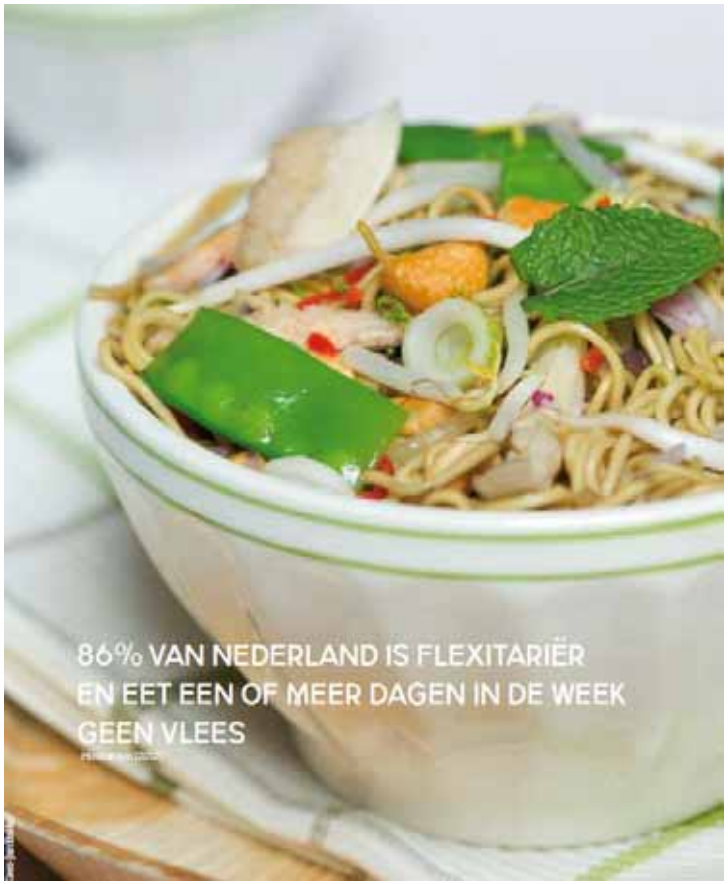
Development space reserved for front runners

Strict policy on fraud & laggards

4. Dynamic change needs more then a tri-angle

Society and NGO's can be valuable partners in responsible innovation

5. Sustainable consumption as a guide towards sustainable production



A. Healthy diet
B. Plant before animal proteins
C. Sustainable choices
D. Reduce & re-use foodlosses

Do we want to feed the world ....

中荷商報
– CHINA TIMES –

Search...

Headlines | Future of Dutch monarchy bright, says historian » by Jesse Wielen, Wang | Monday, 06 May 2013 | 10:02:41 am CEST AM

Home | News | Business | Editorial | Lifestyle | Community | Education | AD | Mini AD | About

Headlines | China | The Netherlands | International

You are here: Home » News » The Netherlands » Chinese babymilk factory in Assen | AsiancIQ | Facebook | Twitter

Chinese babymilk factory in Assen

LAST UPDATED ON WEDNESDAY, 24 APRIL 2013 16:15 | WRITTEN BY CHINA TIMES
WEDNESDAY, 24 APRIL 2013 15:59

SHARE

Next year, a Chinese factory will be open in Assen for the production of baby milk powder. The municipality of Assen, a Dutch entrepreneur and Chinese investors have laid out plans in a 'letter of intent'.

A delegation from Assen visited China last week. The employees of the Dutch embassy were also present the meetings.

RELATED NEWS

- Fewer wasps this summer
- Dutch households spend less
- Shooter Association wants to develop training for shooting club owners
- Dutch grammar schools want more immigrants
- Action against "absurd" mobile subscription rules
- All teaching cars will have a navigator
- Fewer drivers with alcohol on weekends
- Half of Amsterdam police offices to be closed
- Facebook murder involved Chinese teenagers
- 20,000 households in Utrecht without electricity

… or can we sell it a tasty Future

30 MIN. 4 PERS.

CHINATOWN BOLOGNESE

VOLGENS KIRSTEN VESTER

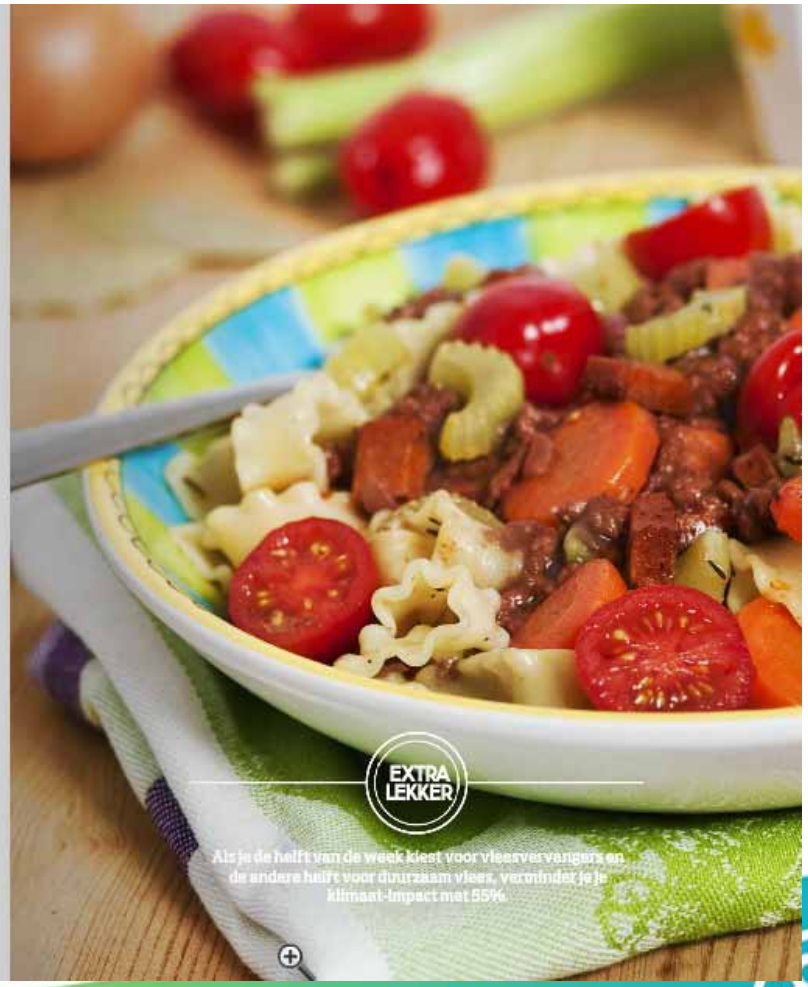
Ingrediënten

3 UIEN
2 TEENTJES KNOFLOOK
3 EL OLIJFOLIE
1 EL BLOEM
150 ML RODE WIJN
2 DL WATER
3 TAKKEN TIJM (ALLEEN DE BLAADJES)
1 BLAADJE LAURIER
ZOUT OF BOUILLONPOEDER
2 EL SOJASAUS
175 GR VEGETARISCH KRUIMGEHAKT
2 WORTELS
4 STENGELS BLEEKSELDERIJ
150 GR VEGETARISCHE SPEKJES
3 EL OLIJFOLIE
1 BAKJE KERSTOMAATJES
PEPER EN ZOUT
400 GR PASTA
OLIJFOLIE
PARMEZAANSE KAAS

Bereiding ★★☆

Hak voor de saus de uien grof, de knoflook fijn. Bak ze samen in de olie tot ze mooi zacht en lichtbruin zijn. Voeg de bloem toe en laat even garen. Blus af met rode wijn en laat even pruttelen. Voeg nu de rest van de ingrediënten toe met uitzondering van het gehakt en laat zachtjes doorpruttelen. Als de saus mooi gebonden is het gehakt toevoegen.

Snijd de wortel en bleekselderij in plakjes. Bak de spekjes en wortel in de olie lichtbruin en voeg halverwege de bleekselderij toe. Voeg als de groenten beetgaar zijn, de kerstomaatjes toe. Breng op smaak met zout en lekker veel vers gemalen peper. Kook de pasta ondertussen zoals op de verpakking aangegeven en giet deze af. Meng de groenten met de pasta, schep dit op de borden en verdeel de gehaktsaus erover. Maak af met wat lekkere olijfolie en eventueel wat Parmezaanse kaas.



Thank you for your attention

Onno van Eijk
Natuur&Milieu

W: www.natuurenmilieu.nl
E: o.vaneijk@natuurenmilieu.nl

Ministerie van Economische Zaken

WAGENINGEN UR
For quality of life

Internationale kansen bij verduurzaming van de veehouderij

GLOBAL RESEARCH ALLIANCE
ON AGRICULTURAL GREENHOUSE GASES