Onehealth - Ecohealth

Wim Hiemstra

NATURAL LIVESTOCK FARMING

Network for Evaluation of One Health

cost EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

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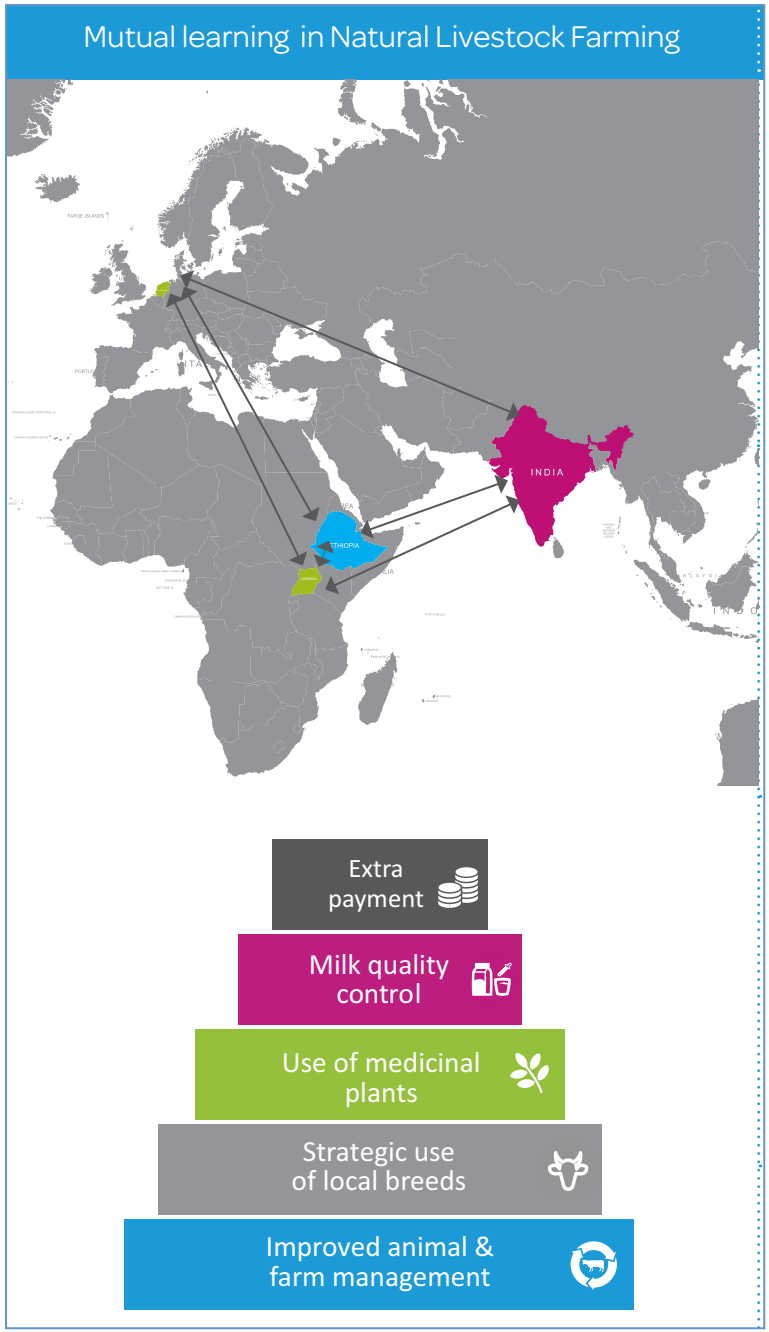


NATURAL LIVESTOCK FARMING

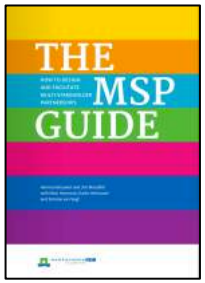
Wim Hiemstra

Agro-ecologist, trained in organic farming (1983)

1983-1995: ILEIA – Low External Input and Sustainable Agriculture (LEISA)

1995-2010: COMPAS – Comparing and Supporting Endogenous Development

2010: CBD Biodiversity and Health
2011: Multistakeholder processes
2012: PROLINNOVA – Local Innovation
2013: Biodiversity in Dutch dairy farming
2014: Natural Livestock Farming



2016-2020: Natural Livestock Farming network & projects Netherlands, India, Uganda, Ethiopia.

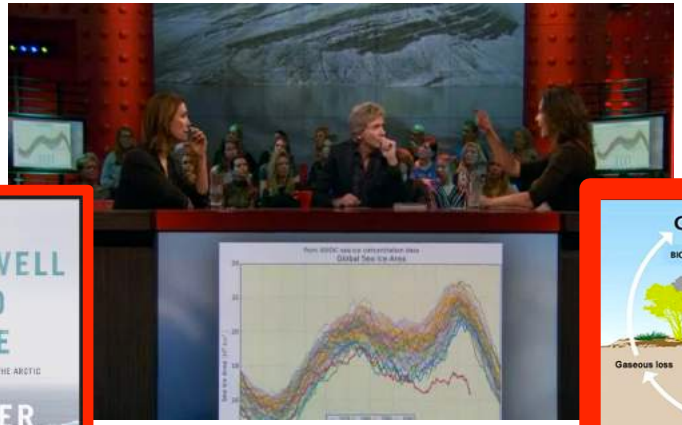
2018: Leeuwarden European Capital of Culture on Biocultural Diversity

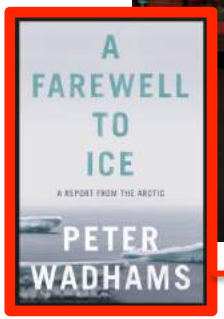
Ecology is ‘hot’

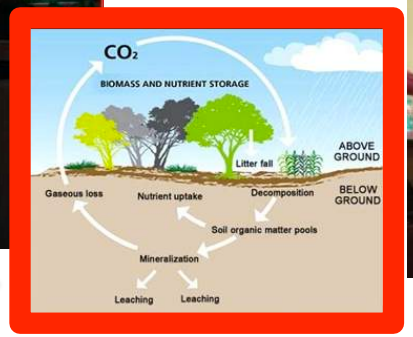
NATURAL LIVESTOCK FARMING

OneHealth/EcoHealth

2017?







Global trends in antimicrobial use in food animals

Thomas P. Van Boeckel[a,1], Charles Brower[b], Marius Gilbert[c,d], Bryan T. Grenfell[a,e,f], Simon A. Levin[a,g,h,1], Timothy P. Robinson[i], Aude Teillant[a,e], and Ramanan Laxminarayan[b,e,j,1]

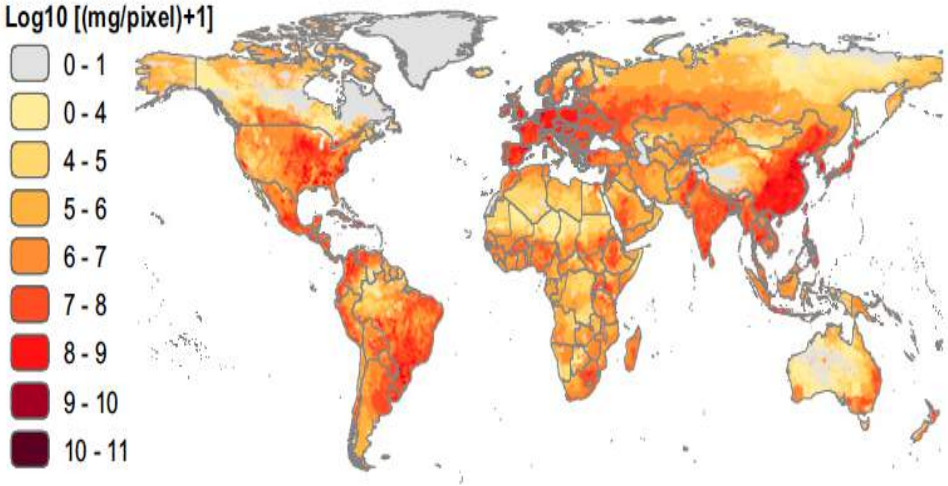


Fig. 3. Global antimicrobial consumption in livestock in milligrams per 10 km^2

PHARMACEUTICALS

China's lakes of pig manure spawn antibiotic resistance

Researchers begin to size up a public health threat from burgeoning pork production

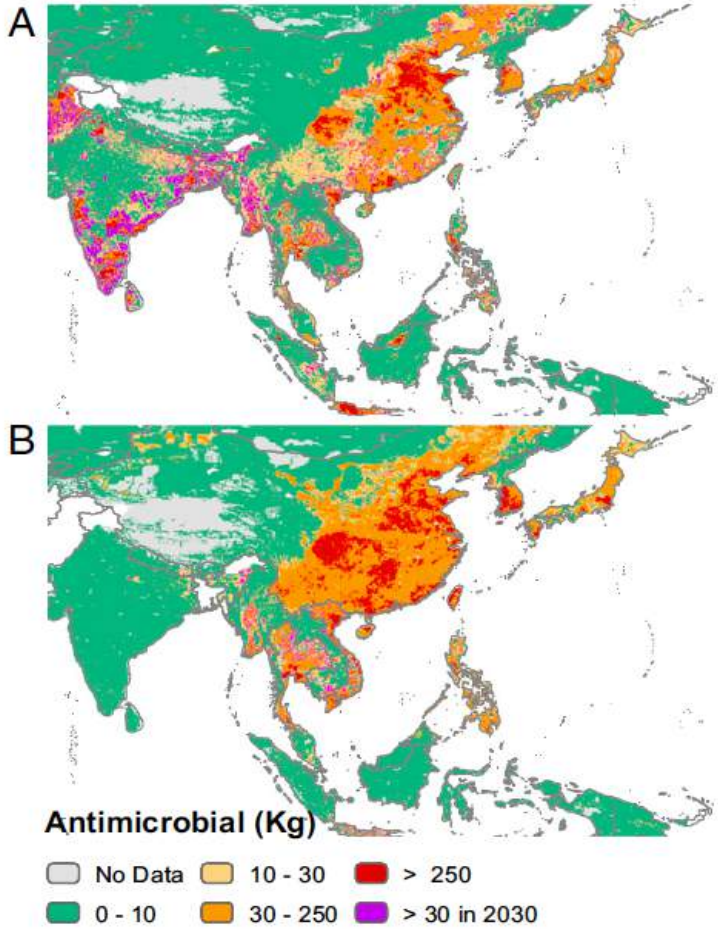


Fig. 4. Antimicrobial consumption in chickens (*A*) and pigs (*B*) in 2010. Purple indicates new areas where antimicrobial consumption will exceed 30 kg per 10 km^2 by 2030.

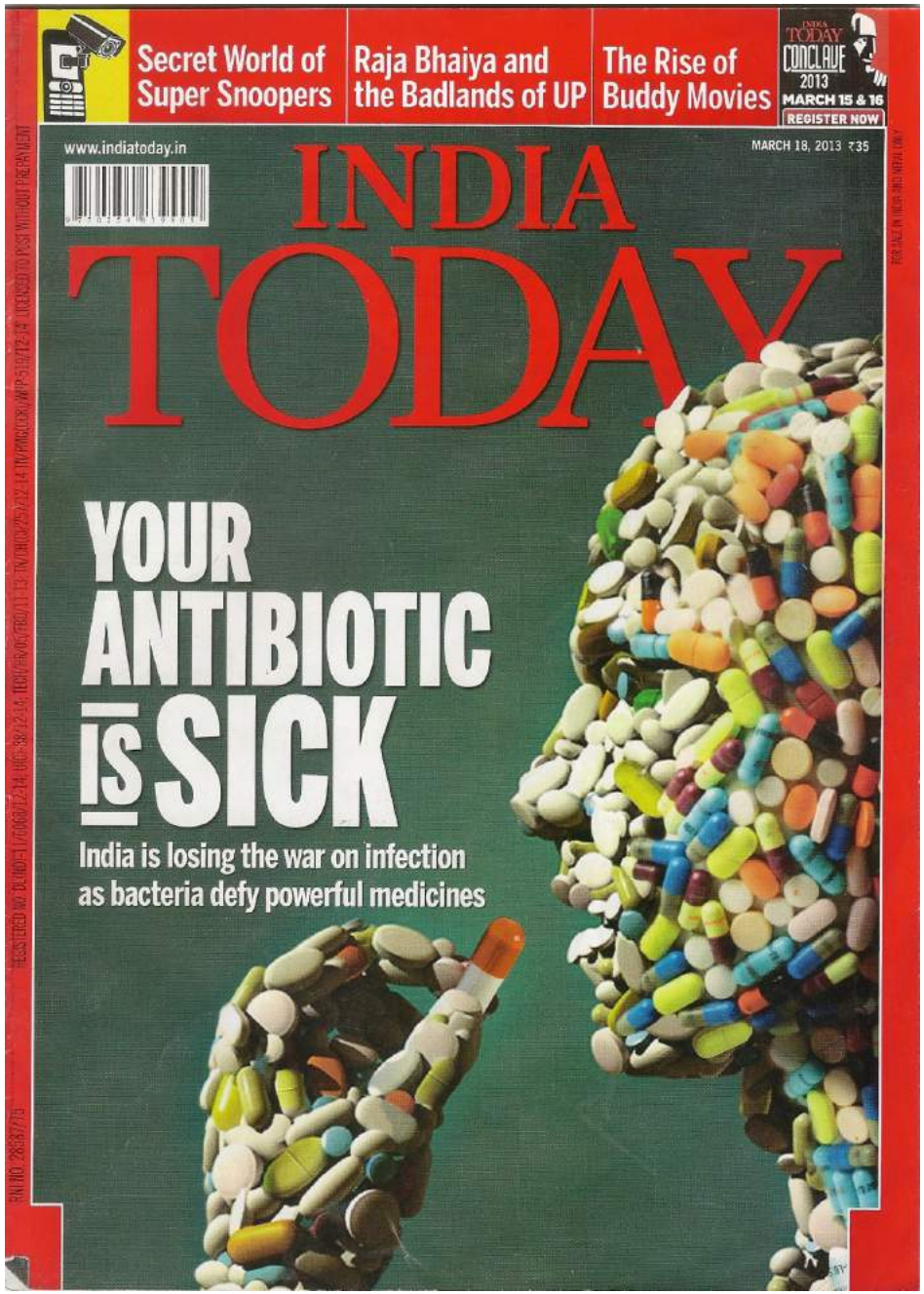
Climate Change and AMR are urgent problems.

If no action is taken:

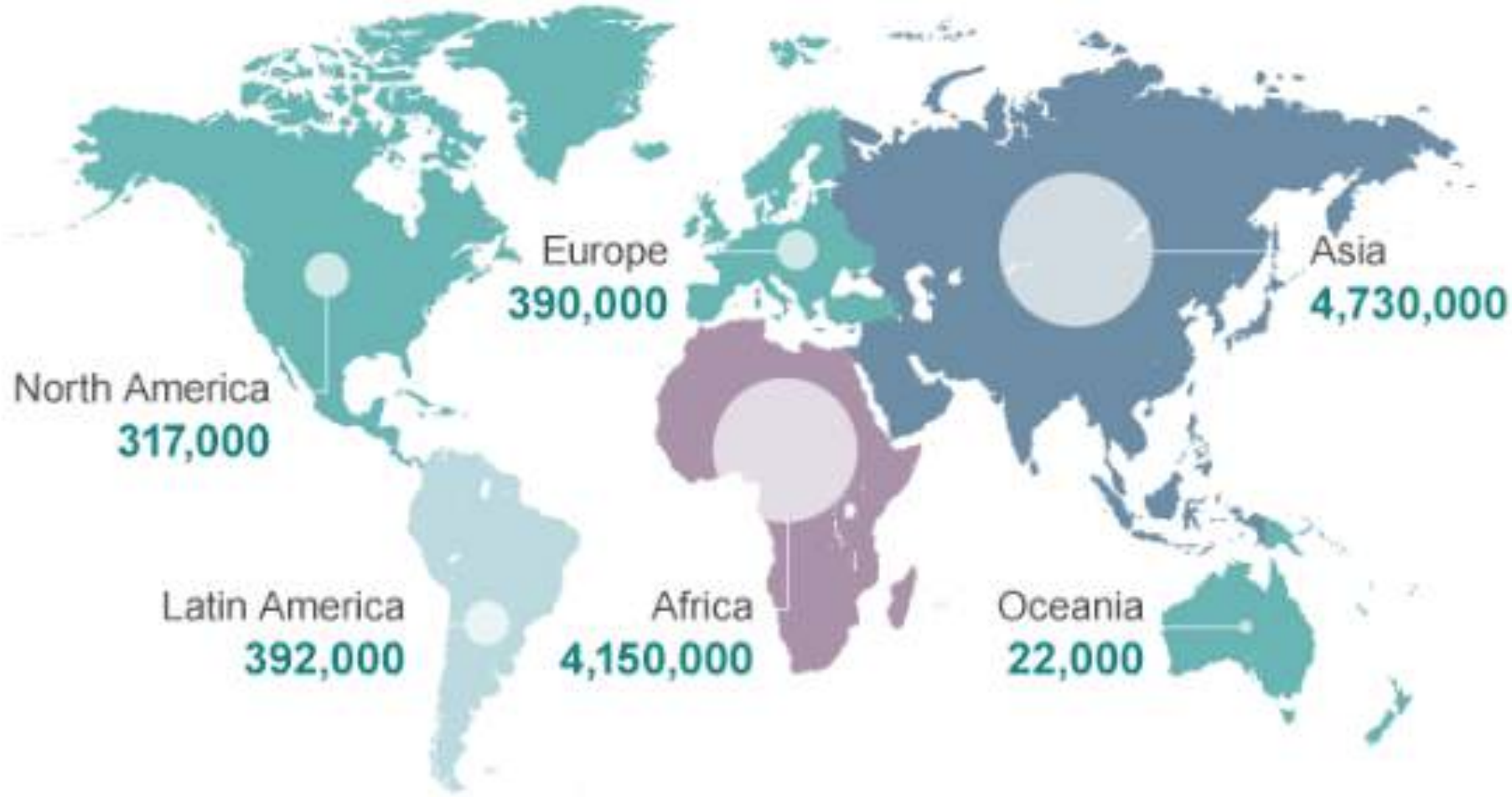
Antibiotics will no longer be effective

Dairy markets can collapse in countries with insufficient control of residues in milk

-> Combined focus on **milk quantity** & **quality** (including all residues) is urgently needed



If no action: over 10 million expected deaths per year attributable to Anti-Microbial Resistance by 2050



Source: Review on Antimicrobial Resistance 2014

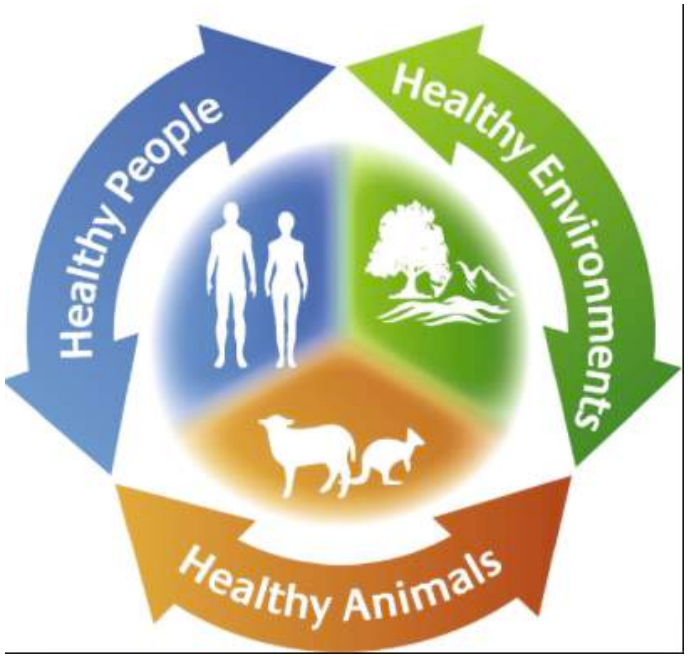
World Health Organization

Review on Antimicrobial Resistance

Tackling drug-resistant infections globally

NATURAL LIVESTOCK FARMING

International organizations agree: Anti-Microbial Resistance(AMR) needs global response now!



With focus on integrated One Health approach

Proposed actions – with focus on livestock:

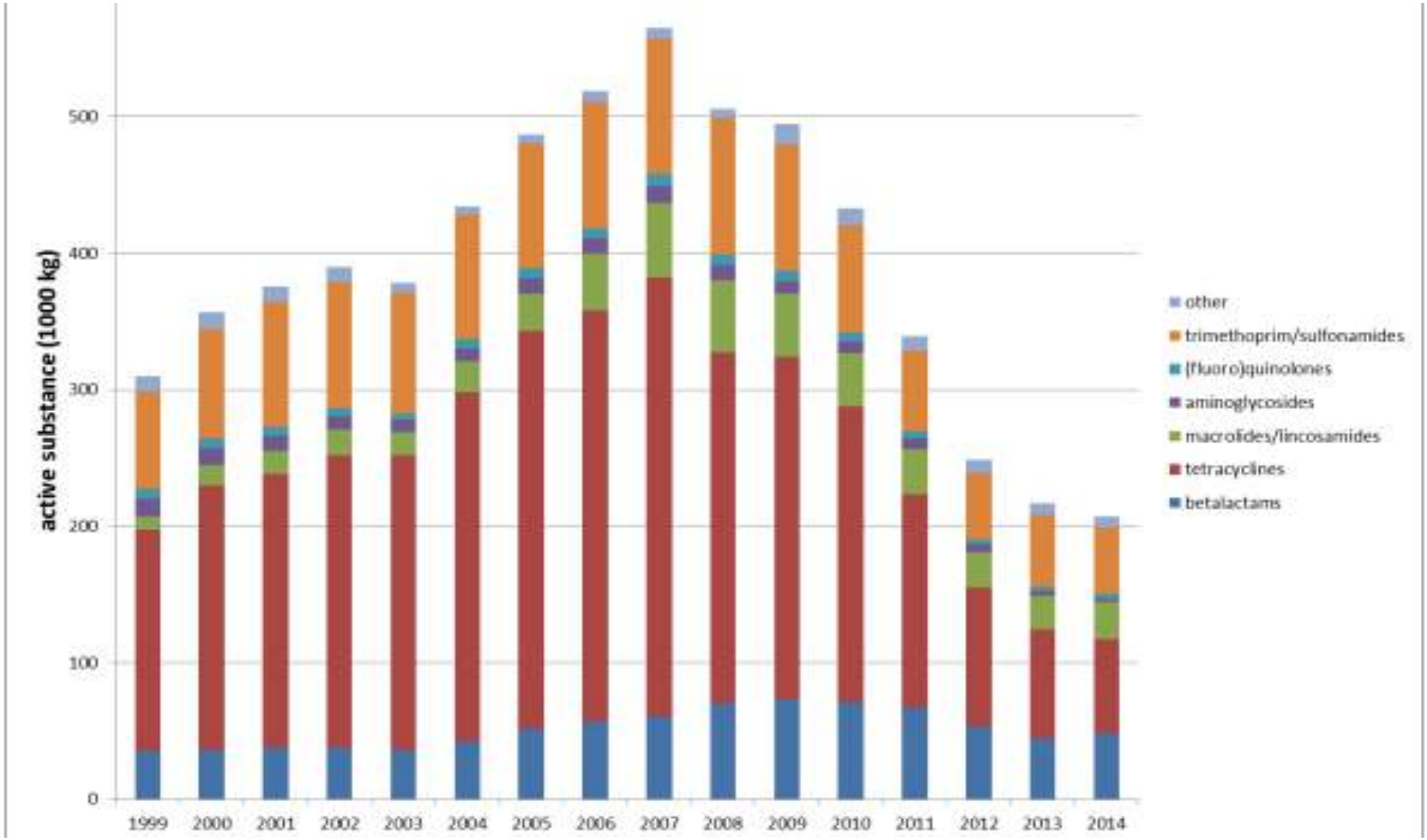
Review on Antimicrobial Resistance

Tackling drug-resistant infections globally

NATURAL LIVESTOCK FARMING

1. Global awareness campaign
2. Reduce unnecessary use of antibiotics in livestock & their dissimination to the environment
3. Improve surveillance and food quality control
4. Promote development and use of alternatives to antibiotics
5. UN Resolution (sept 2016): all countries need to make a national AMR reduction plan

In Netherlands: antibiotic use in livestock farming too high – now reduced



Anti-biotic use in Dutch livestock production 1999 - 2014

Solutions include:

- Increased awareness
- Strict administration of antibiotic use
- Use of more resilient cattle breeds
- Herbs in pastures and feed

But:

- 'Old' knowledge on medicinal plants has been lost in NL
- Next level of gains from Ecohealth: transition to resilient agro-ecology = natural livestock farming!

NATURAL LIVESTOCK FARMING

2014 – 2015 -- 2016:
Natural Livestock Farming (NLF)

exchanges Netherlands – Indian – Ugandan – Ethiopian

vets & farmers & researchers

on reducing antibiotic use in dairy farming

Topic: use of medicinal plants

Participating organizations

NATURAL LIVESTOCK FARMING

Netherlands:

OXFAM Novib

DUTCH FARM EXPERIENCE

LOUIS BOLK INSTITUTE

provincie Overijssel

RIKILT WAGENINGEN UR

NVF Nederlandse Vereniging voor Fytotherapie

Vkon veterinair kenniscentrum oost nederland

India:

TransDisciplinary University

Ethiopia:

E.S.A.P

Uganda:

PENHA Pastoral & Environmental Network in the Horn of Africa

Dutch Farm Experience and Oxfam Novib present:

Africa's Milk dilemma

A film by Thom Verheul

NATURAL LIVESTOCK FARMING

2015 output:
film (30 min)
Africa's Milk Dilemma
on national TV

2016-’20 Healthy Cows – Healthy Food-Healthy Environment

NATURAL LIVESTOCK FARMING

- Strengthen 5-layer strategy in pilots in 4 countries
- Awareness raising on antibiotics and other chemicals, milk-residues and food quality
- Link to One Health policies
- Continued international exchanges

Develop joint services:

- Support in developing residue-free dairy chain
- Training veterinarians & farmers
- Natural medicine product development
- Exchanges in other areas, e.g. poultry production

NATURAL LIVESTOCK FARMING

Consumers
Policy makers
Milk quality controllers
Formal/informal marketing

Human health

Environmental health

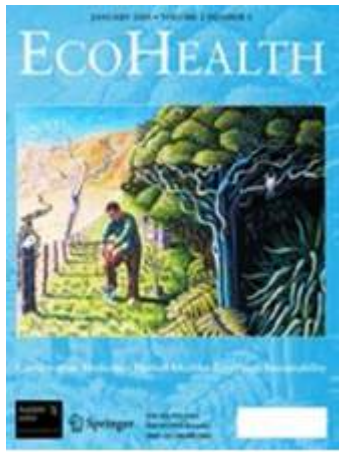
Animal health

Water quality controllers
Farmers with herb rich meadows
Herbal medicine cultivators
(Community gardens)

Farmers,
(Ethno)Veterinarians
Dairy companies
Medicine producers
Cattle breeders

One Health / Ecohealth stakeholders

One Health – Ecohealth



- Emerging disciplines, which promote, study & act on the links between animal, human, and ecosystem health
- The need evolved from the recognition of a crisis: increasing levels of disease driven by human-induced environmental degradation, human behaviour and wide ranging ecological changes
- Transdisciplinary, bringing together veterinarians, epidemiologists, public health & social scientists, economists resource managers & more…
- One Health deals with biomedical questions, with an emphasis on zoonoses, and is historically more health science-driven.
- EcoHealth is an ecosystem approach to health and focuses on environmental and socioeconomic issues; it is initially designed by disease ecologists working in the field of biodiversity conservation.
- EcoHealth is seen by several scientists as a One Health approach which optimizes interdisciplinarity including strong participatory and citizenship components.

One Health <-> Whose health?

Three broad narratives:

1. ‘Integrated narrative’ - Holistic approach can deal with complex interactions of ecology, animals, people and disease.
2. ‘Outbreak narrative’ - To avoid risk of emergence and spread of infectious diseases, focus on surveillance control and virus hunting.
3. ‘Economic narrative’ – US $ 6.7 billion/ year (World Bank 2012)
   “bottom-up field level collaboration across professions is needed to come to a truly integrative One Health” (p15)

OHEH Strengths / Weaknesses

NATURAL LIVESTOCK FARMING

- **Urgency of AMR** puts OHEH on the global agenda; the 2016 Melbourne conference reaches out to policy and private sector

- Integrated, holistic **OHEH** approach can be strengthened with **Agroecological** approaches and jointly work towards urgent changes

- Some innovative **participatory approaches** now advance OHEH in practice – GREASE network in Asia & Natural Livestock Farming international platform

Difficult to demonstrate benefits/ strengths, more **proof of concept needed**

Variety of concepts - OH, EH, Conservation Medicine, Planetary Health, Ecosystem Health **- dilutes the power of the message**

Inter/transdisciplinary collaboration **lacks common language & data systems**

Not yet openness to learn from solutions developed from other, local knowledge systems, like Ayurveda in India. **Missing opportunities!**

Challenges in OHEH (Brussels, 6-10-16)

- Data integration: how, what, who?
- Methodological integration: tools, models, social science?
- Communicate OHEH results
- Policy uptake / incorporation
- More action-research needed
- More (funding support) leading to scientific recognition
- Open OHEH to other health concepts

OH Evaluation Framework

1. Define the system
2. Describe OH initiative
3. Assess **One Health-ness**
4. Describe Theory of Change & (un)intende outcomes
5. Design evaluation
6. Select metrics for outcomes
7. Conduct evaluation
8. **Compare One Health-ness** and evaluation outcomes

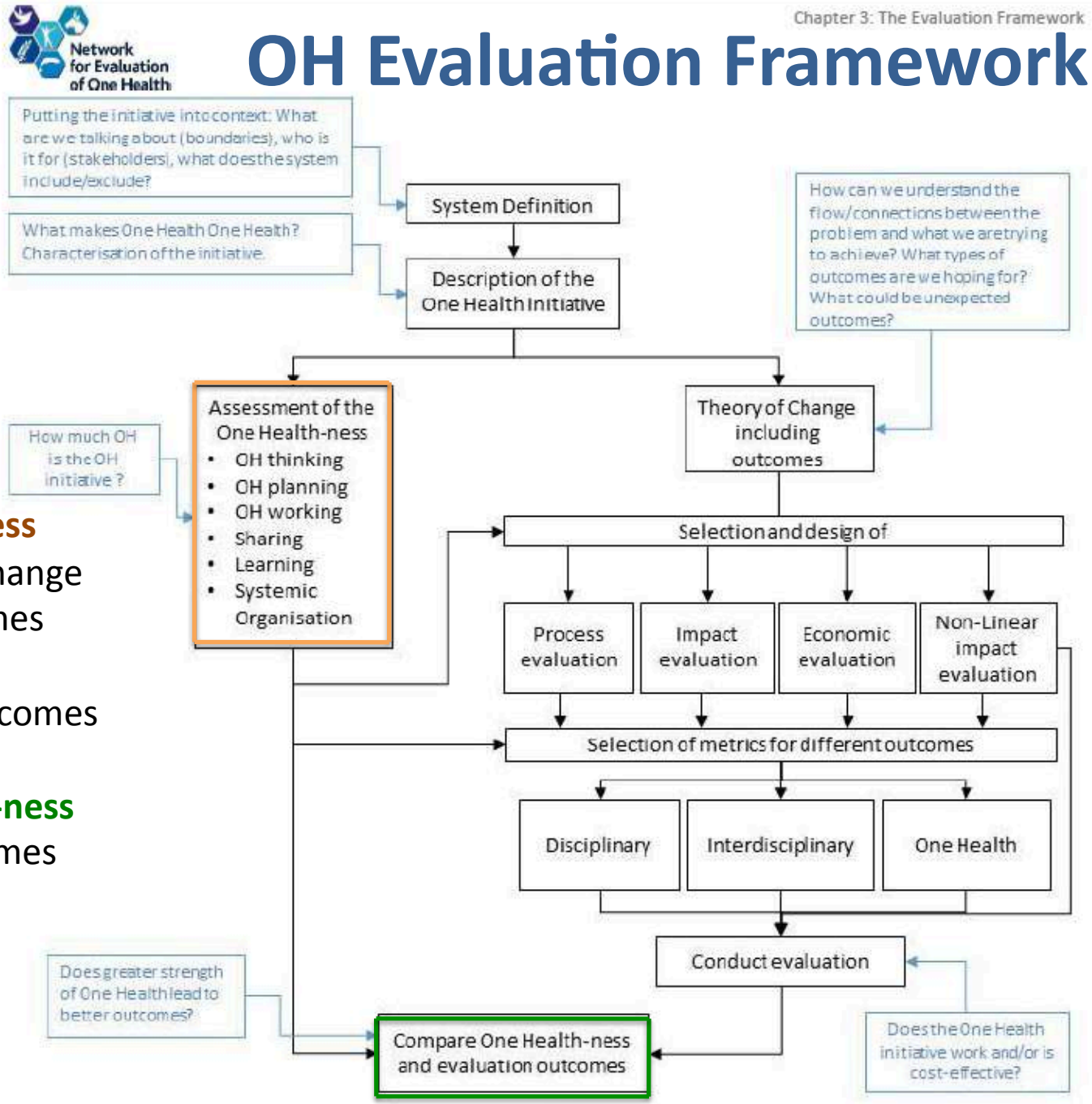


Figure 2: Schematic overview of evaluation steps (in black) and the associated questions that can be

OneHealth/EcoHealth

Recommendations 6-10-'16

1. An inter- and transdisciplinary approach to (infectious) diseases will allow to better **foresee and thus prevent diseases (euros!)**

2. **(Agro-)Biodiversity of plants and livestock** is an important insurance against outbreaks and diffusion of zoonotic diseases

3. **Open, collaborative networks** (not silo institutions!) of scientific experts, policy experts and local knowledge experts are needed to advance One Health/EcoHealth

4. **Monitoring and evaluation frameworks** are needed that allow for tailoring to local realities

5. The new European **OneHealth/EcoHealth Community of Practice** focuses on education, the role of social science in OHEH, and on a **science-policy-practice** platform

OHEH CoP & H2020: intensify dialogue?

inbo NATURAL LIVESTOCK FARMING

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

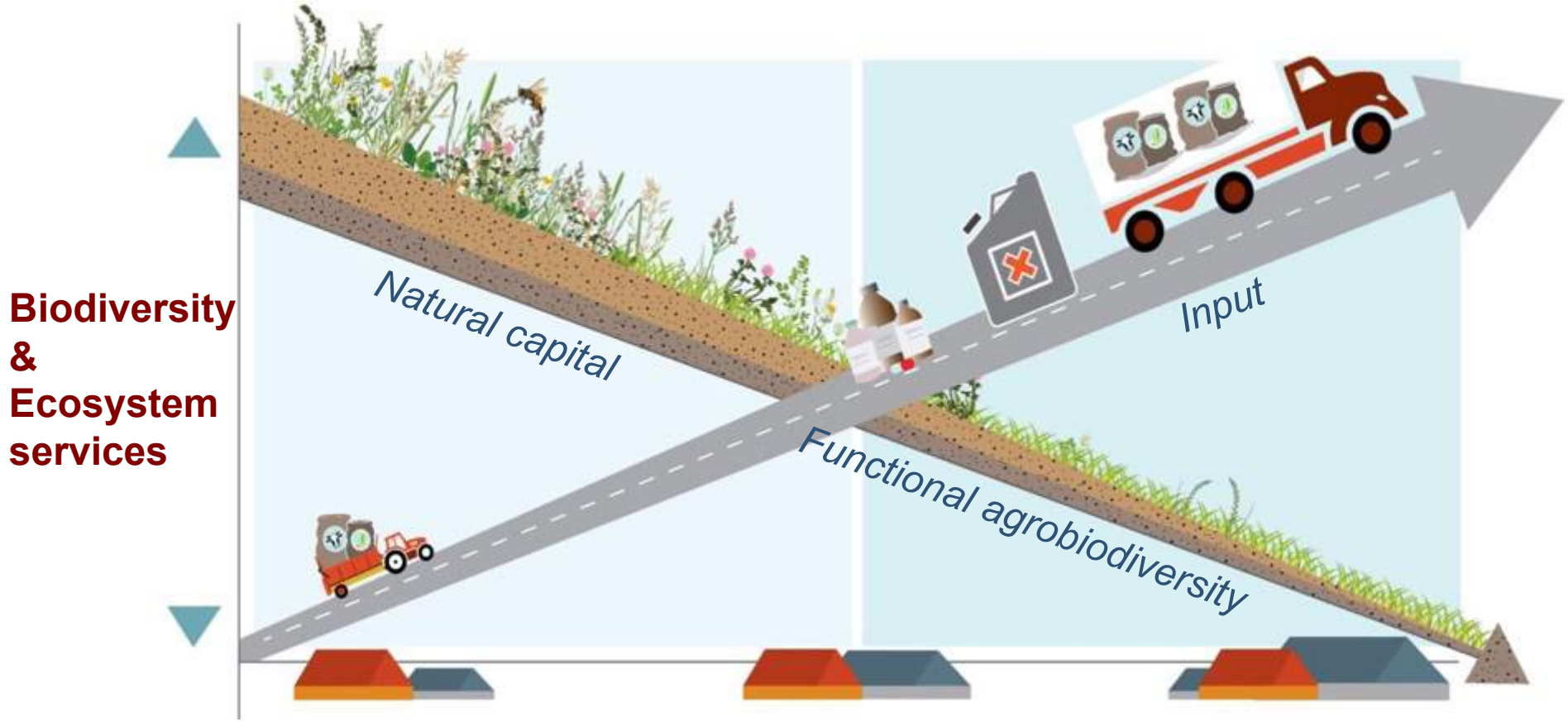
Network for Evaluation of One Health

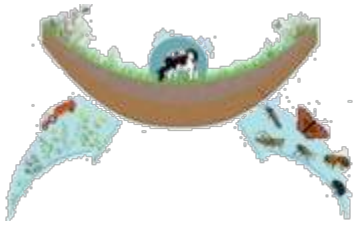
cost EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

Reducing antibiotics = bringing farming back to nature = ecological intensification = natural livestock farming

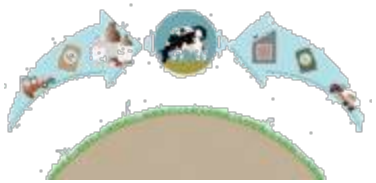
NATURAL LIVESTOCK FARMING

Need for ecological intensification in the Netherlands

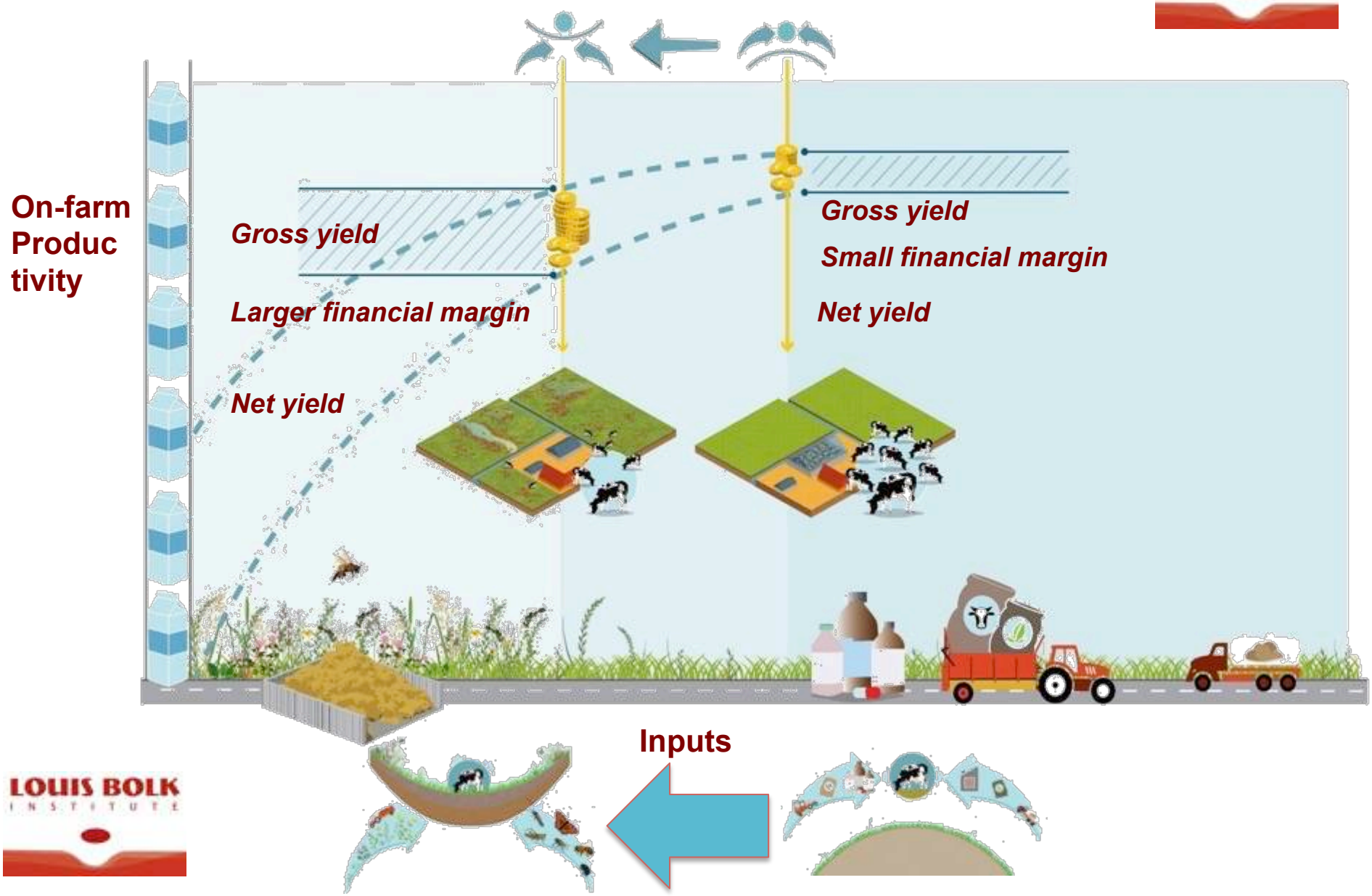




From large-scale, high risk, static agriculture to scale-decrease, dynamic, self-regulating Agro-ecology

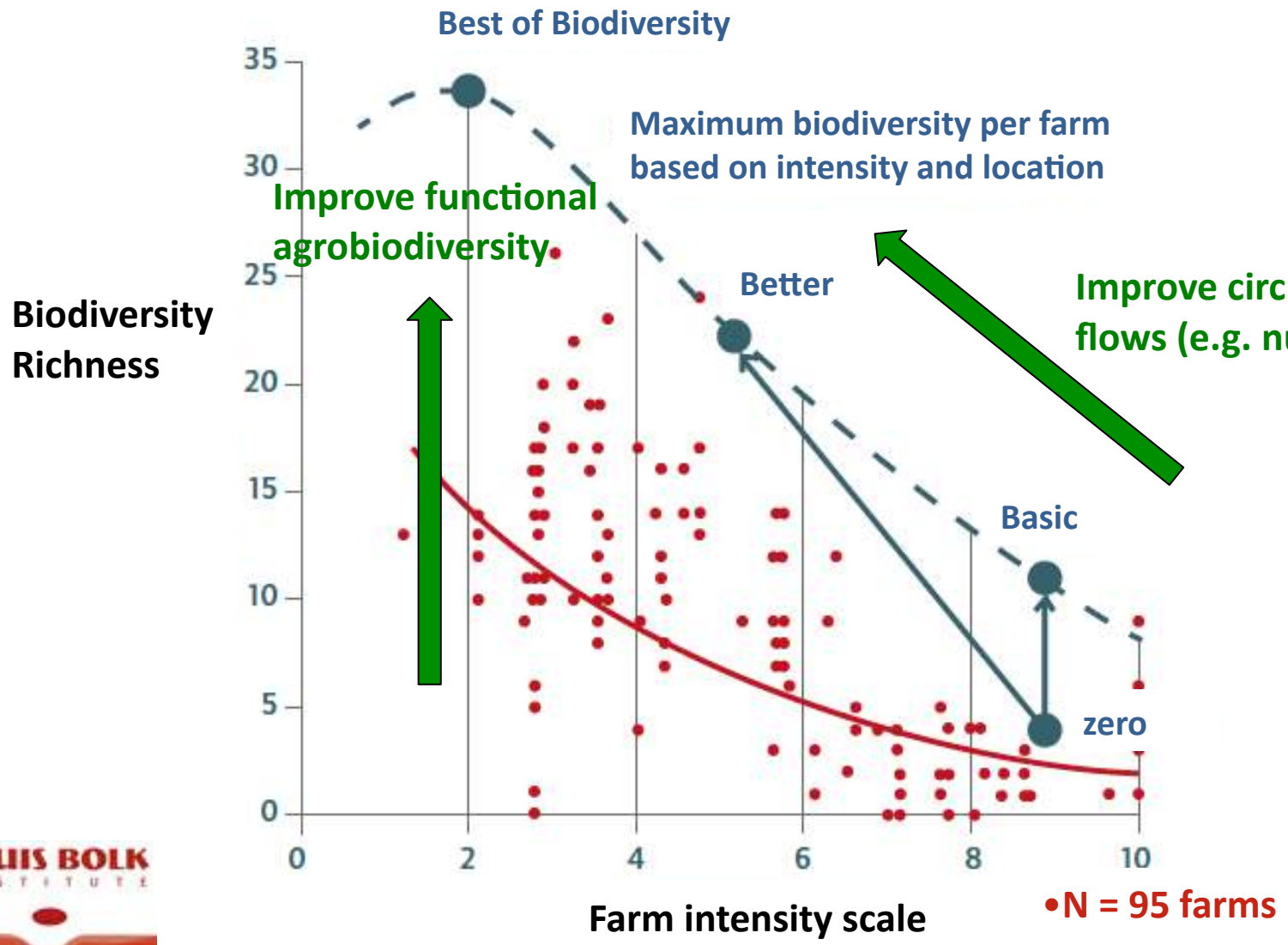


Nature-inclusive farming



Business model Nature-inclusive Dairy (NL)

FrieslandCampina – RABO bank - WWF



Integrated ecology from farm to landscape

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Increase Functional Agrobiodiversity

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Landscape diversity:

Farmers' collectives create Green Infrastructures

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Farmers & nature organisations improve habitats and corridors

LOUIS BOLK INSTITUTE

Farmers and nature organisations conserve targeted species

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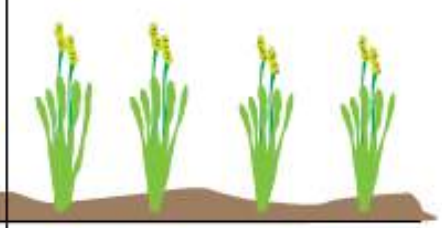
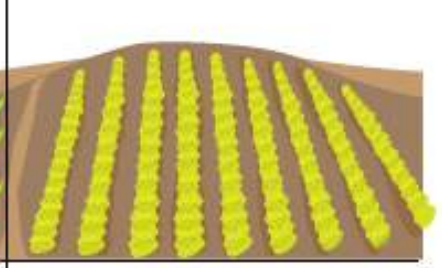
Nature-inclusive farming for Dietary Diversity

	High diversity	Low diversity
Genetic crop diversity		
Farm diversity		
Landscape Diversity		
Nutrition-sensitive Landscapes		

West Africa: Agroecology for Dietary Diversity in 5 countries to enable farmers produce (local) crops rich in micronutrients

With the goal to counter hidden hunger and allow consumption of diverse diets

groundswell international

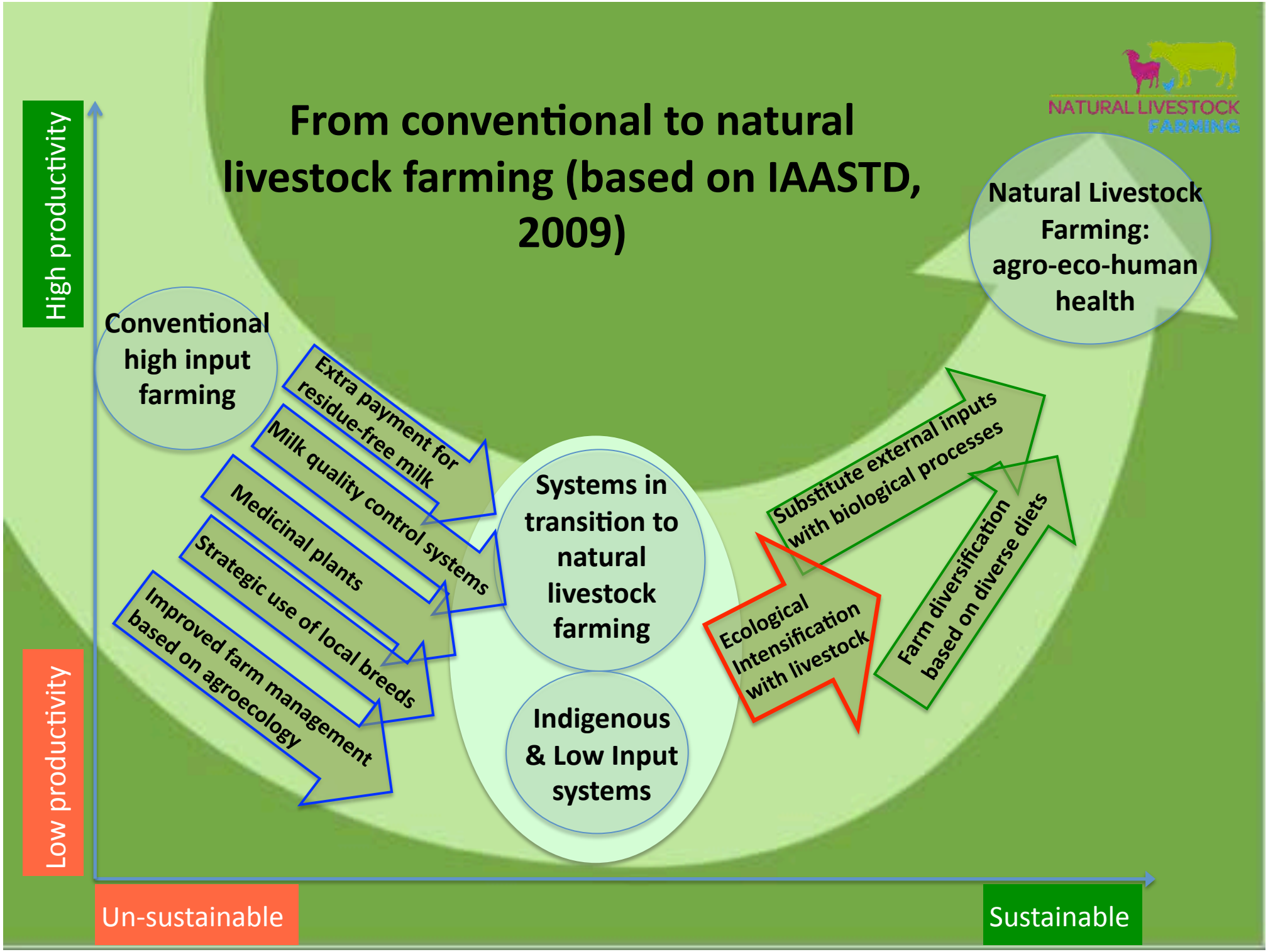
GLOBAL RESILIENCE PARTNERSHIP

Les parcelles contrôlées par les femmes
Women controlled plots have more chance of producing nutritious food
groundswell international
GLOBAL RESILIENCE PARTNERSHIP

Make markets work for vulnerable groups, especially to commercialize food for diverse diets

NATURAL LIVESTOCK FARMING

Integrating livestock in agriculture allows for diversification of diets and increases resilience of agro-ecosystems a.o. through improving soil fertility with manure and compost


From conventional to natural livestock farming (based on IAASTD, 2009)
NATURAL LIVESTOCK FARMING
High productivity
Low productivity
Un-sustainable
Sustainable
Conventional high input farming
Extra payment for residue-free milk
Milk quality control systems
Medicinal plants
Strategic use of local breeds
Improved farm management based on agroecology
Systems in transition to natural livestock farming
Indigenous & Low Input systems
Ecological Intensification with livestock
Substitute external inputs with biological processes
Farm diversification based on diverse diets
Natural Livestock Farming: agro-eco-human health

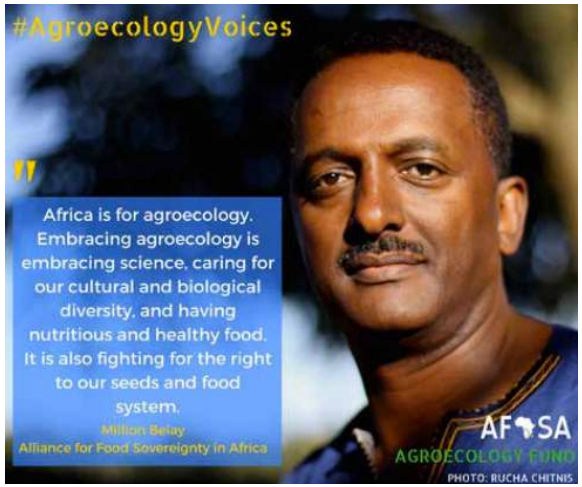
Conclusion

- H2020 has potential to align with the OH 2030 Agenda and SDGs towards a fully integrated systems approach towards agro-eco-human health

- In Europe and Africa

Recommendations H2020

1. Include OHEH evaluation framework and natural livestock farming in H2020
2. Complement scientific research in One Health with solutions from practice by linking action-research networks on OHEH and Natural Livestock Farming in Europe, Africa and China / India
3. Make 'Contribution to Carbon Sequestration' and 'Ecological Intensification' obligatory for H2020
4. Fix the food metrics: H2020 to include polluter pays principle and TEEBAgFood on externalities in proposals



COMMENT

Fix food metrics

For sustainable, equitable nutrition we must count the true global costs and benefits of food production, urge Pavan Sukhdev, Peter May and Alexander Müller.

NATURAL LIVESTOCK FARMING

#AfterCAP | Fit, Fair & Sustainable: A new agricultural policy model for the CAP 2021

Posted on 20 November, 2016 by ARC in Latest from EU Member States, Main stories // 0 Comments

Sebastian Lanker and Rainer Oppermann explain how CAP is failing environmentally, before outlining specific budget neutral proposals, including for sustainability and agri-nature payments.

Photo (c) Rainer Oppermann. Blühstreifen / flower strips enhance biodiversity & help pollinators in agricultural landscape

5. Support radical renewal of **next CAP** to focus on Carbon Sequestration, Ecological Intensification and Natural Livestock Farming

6. **Support farmers** e.g. through EiP to make the transition to Natural Livestock Farming

Thank you!

www.naturallivestockfarming.com
www.dutchfarmexperience.com

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cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

inbo

Network for Evaluation of One Health

cost
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY