

The Global Resource Crisis and Livestock

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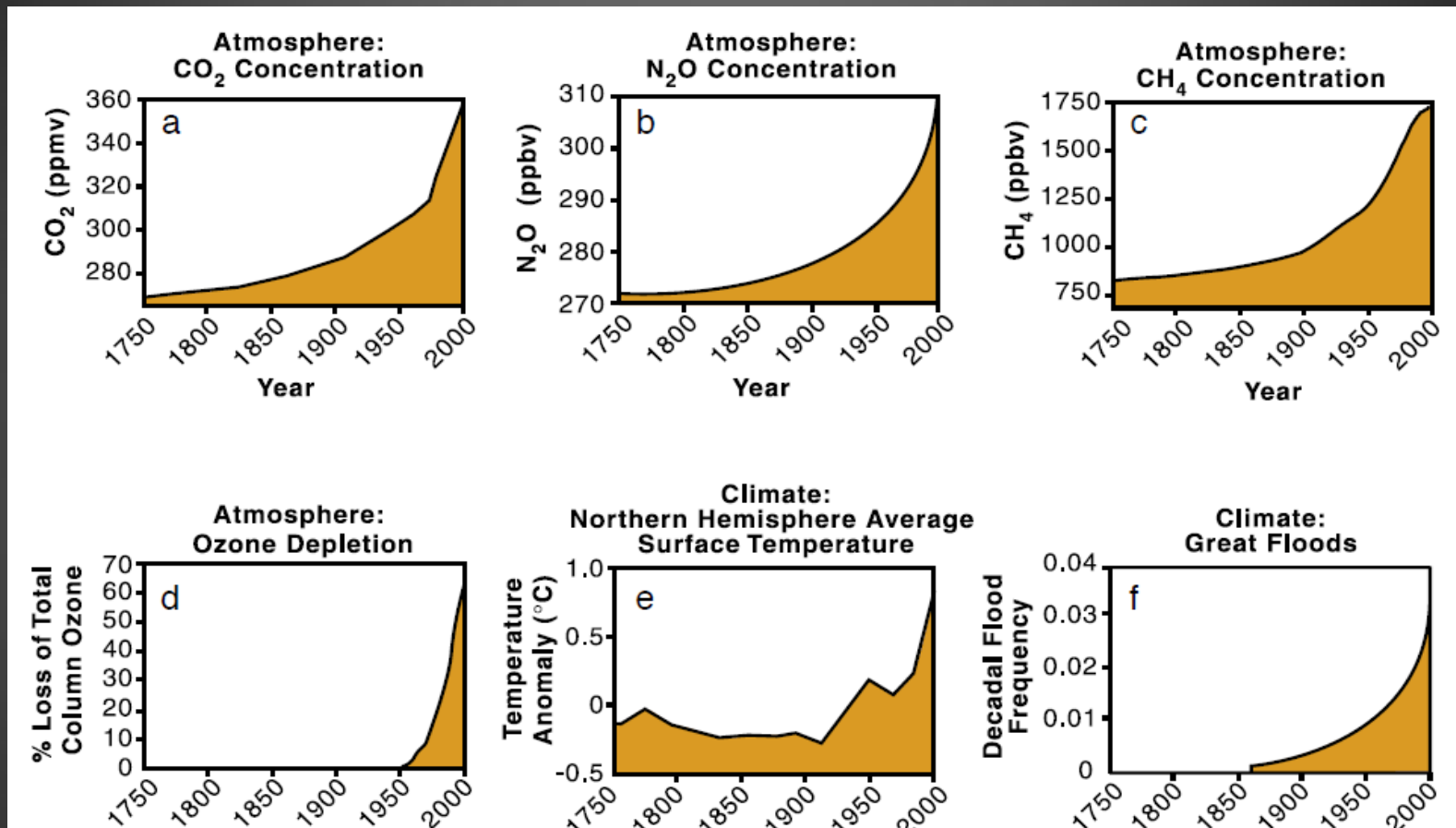
Brussels, 7 November 2012

ATF – Copa/Cogeca - FAO

A Global Resource Crisis

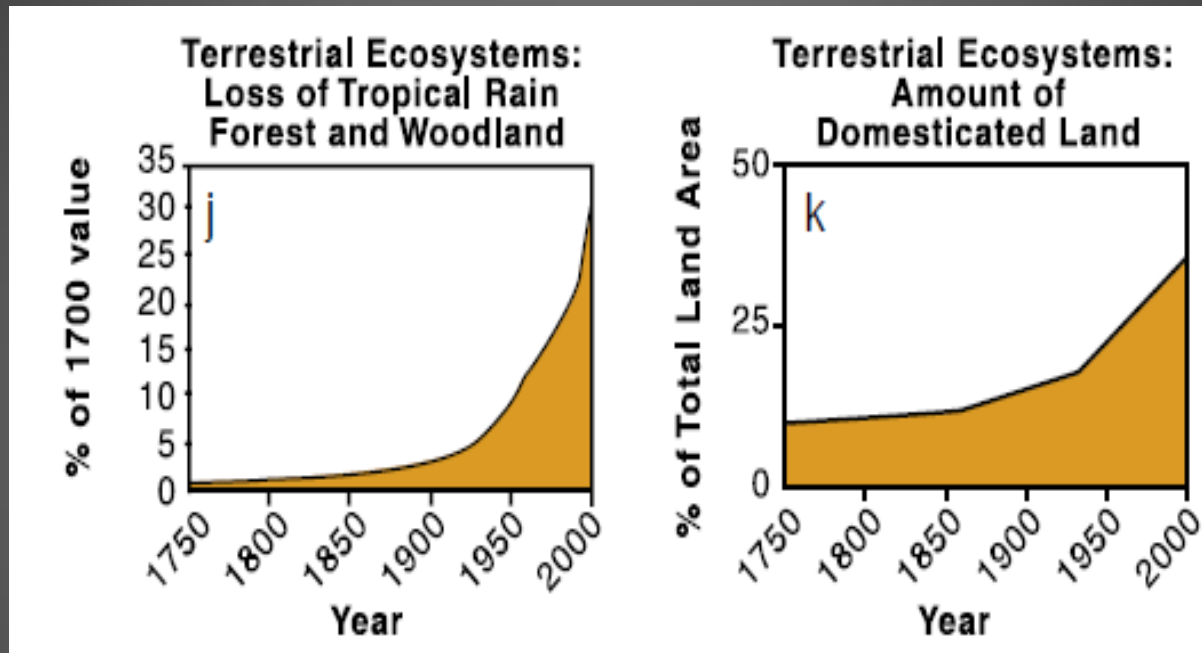
- Climate change
- Land scarcity
- Water scarcity
- Nitrogen and Phosphorus cycles
- Energy crisis – peak oil
- Mass extinction – rapid loss of biodiversity

Climate Change



Source: IGBP synthesis: Global Change and the Earth System, Steffen et al 2004, taken from (a) Etheridge et al. (1996) *J. Geophys. Res.* 101:4115-4128; (b) Machida et al. (1995) *Geophys. Res. Lett.* 22:2921-2924; (c) Blunier et al. (1993) *J. Geophys. Res.* 20:2219-2222; (d) J.D. Shanklin, British Antarctic Survey; (e) Mann et al. (1999) *Geophys. Res. Lett.* 26(6):759-762; (f) Milly et al. (2002) *Nature* 415:514-517

Land Scarcity



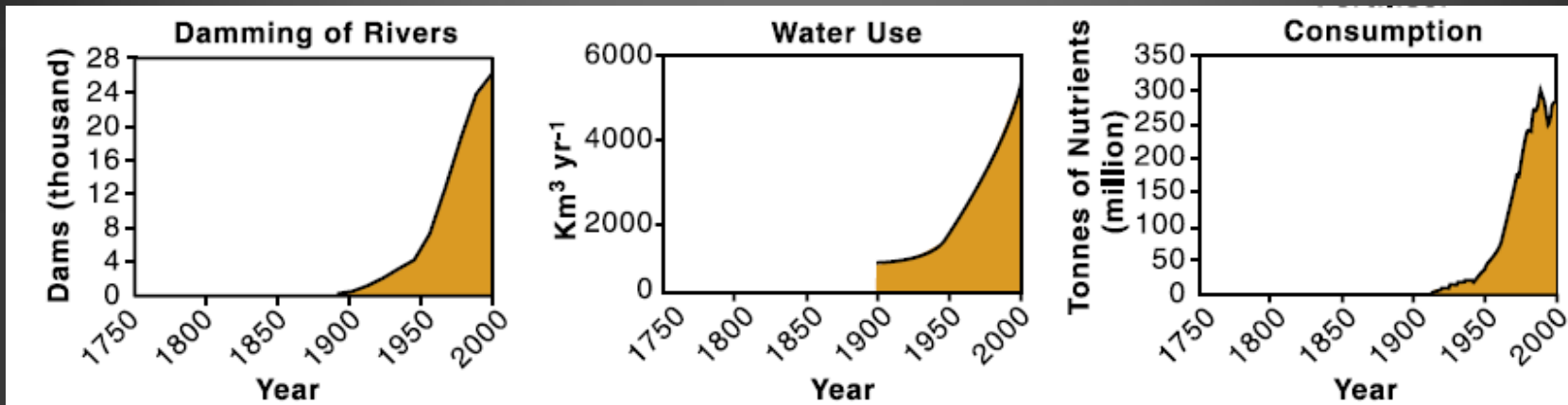
Over the past 50 years:

World's cultivated area +12 % / Agricultural production x2.5

Source: IGBP synthesis: Global Change and the Earth System, Steffen et al 2004, taken from

(j) Richards (1990) In: *The Earth as transformed by human action*, Cambridge University Press; WRI (1990) *Forest and rangelands*; (k) Klein Goldewijk and Battjes (1997) *National Institute for Public Health and the Environment (RIVM). Bilthoven, Netherlands*

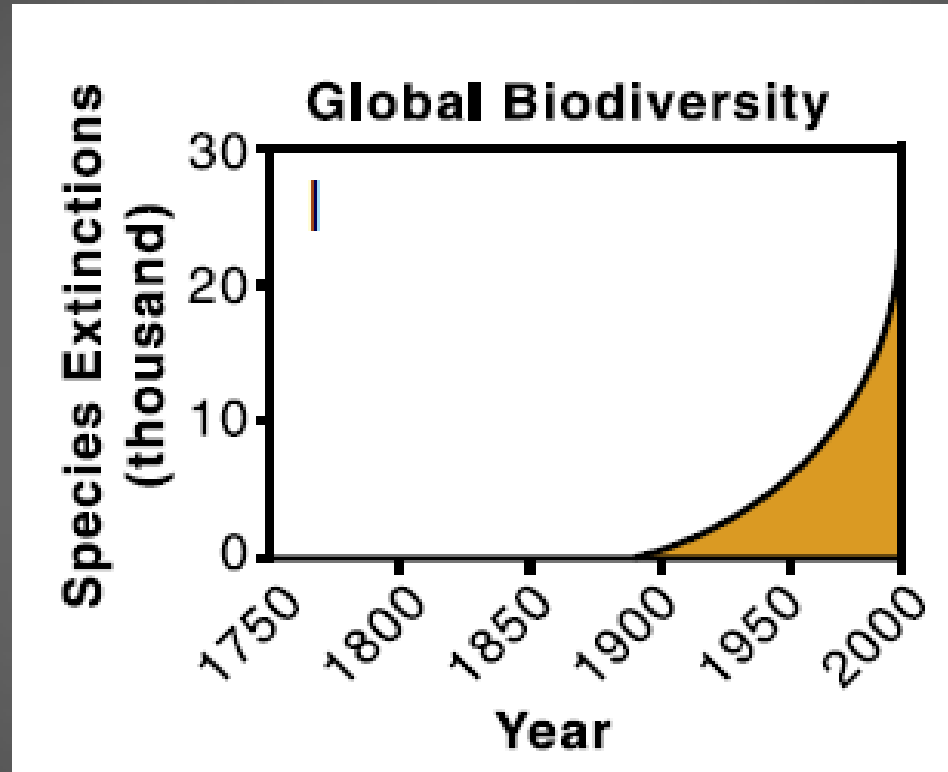
Water scarcity and quality



Agriculture = 70 % of all water from aquifers, streams and lakes
Global water demand + 50% between 1995 and 2025 (UN Environment Programme, 2008)

Source: IGBP synthesis: Global Change and the Earth System, Steffen et al 2004, taken from *World Commission on Dams (2000) The report of the World Commission on Dams*; *Shiklomanov (1990) Global water resources*; *International Fertilizer Industry Association (2002) Fertilizer indicators*

Biodiversity losses



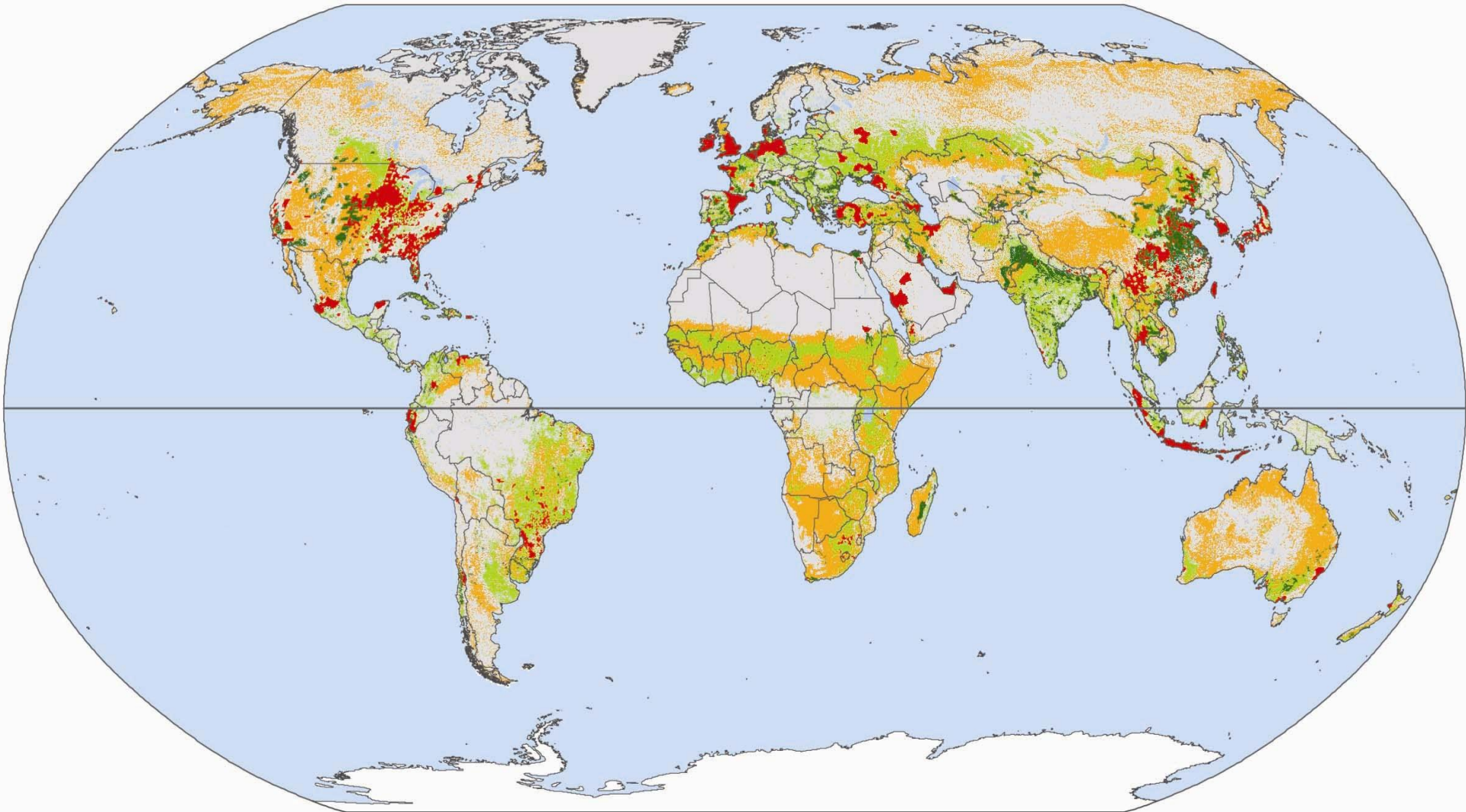
Source: IGBP synthesis: Global Change and the Earth System, Steffen et al 2004

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

*terrestrial animals kept for food

Distribution of livestock production systems




Livestock production systems

 Mixed, irrigated


 Grazing

 Areas dominated by landless production

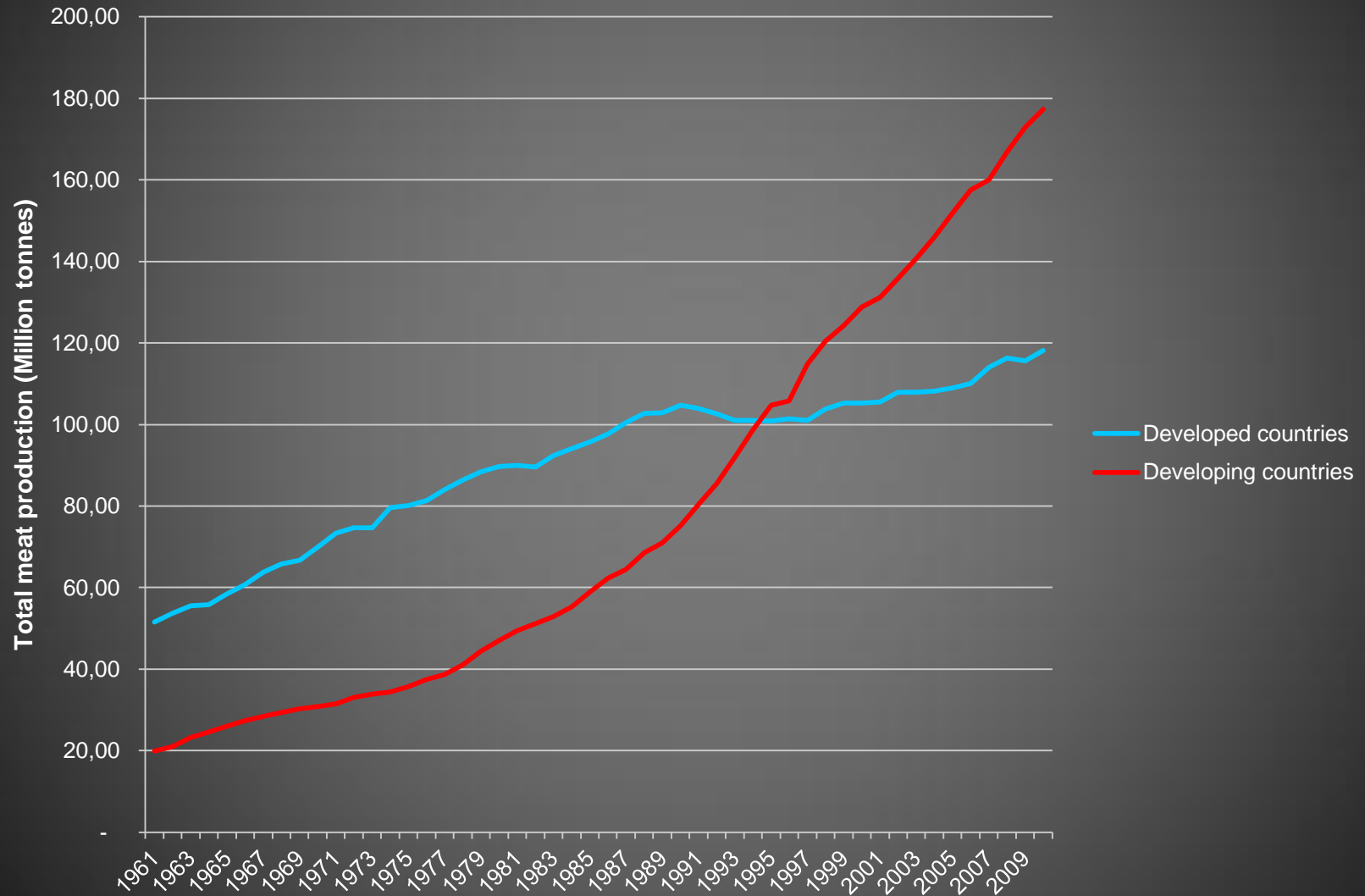
 National boundaries

 Mixed, rainfed

 Other type

 Boreal and arctic climates

Total meat production



Livestock in Traditional Societies

Livestock:

- Add to total food supply
- Help territorial expansion
- Help intensify agriculture
- Allow trade and asset accumulation
- Core aspect of cultures and religions

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?

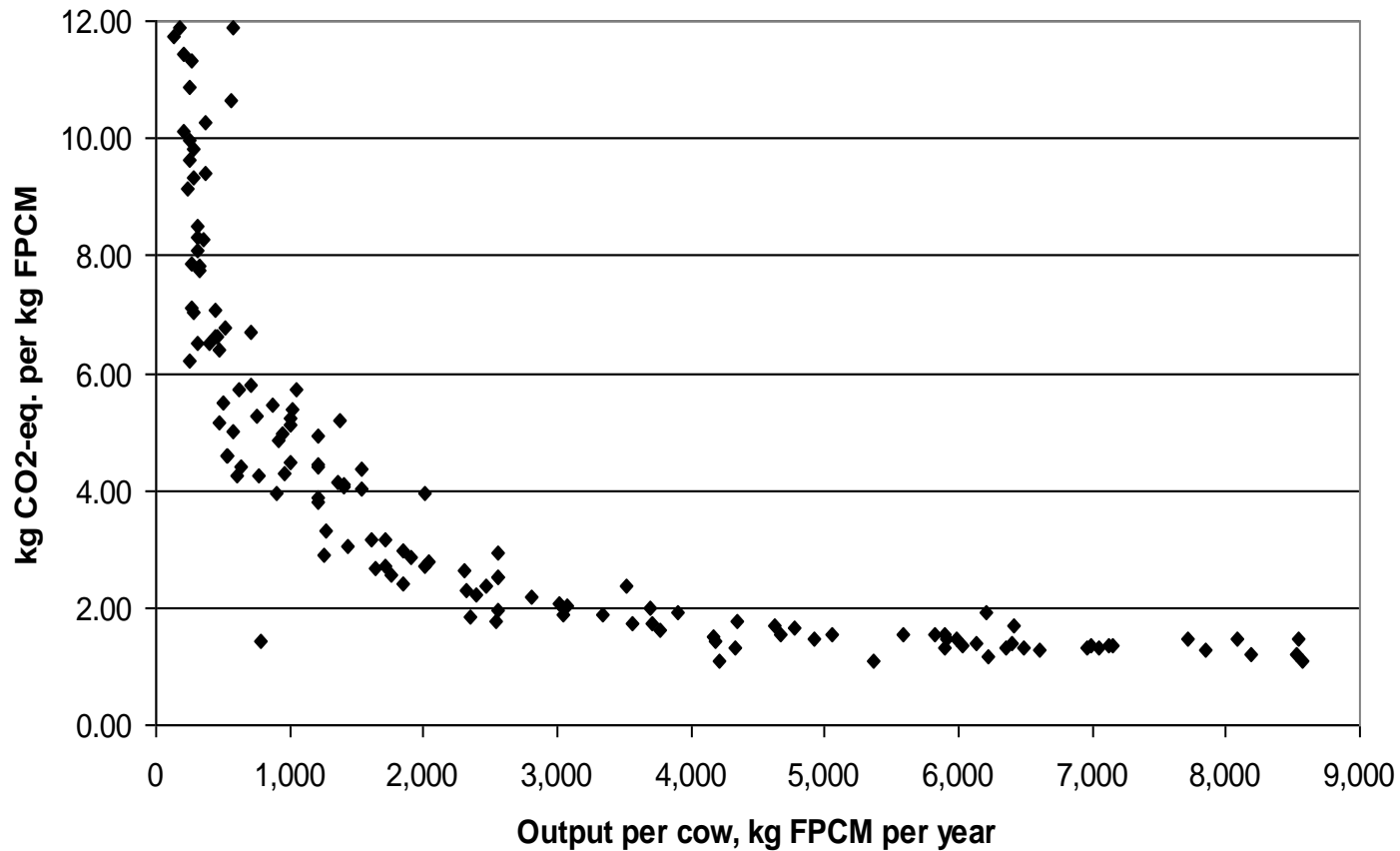
- Fish
- Synthetic meat
- Fake meat

What are the Options?

Technical solutions for improving production exist:

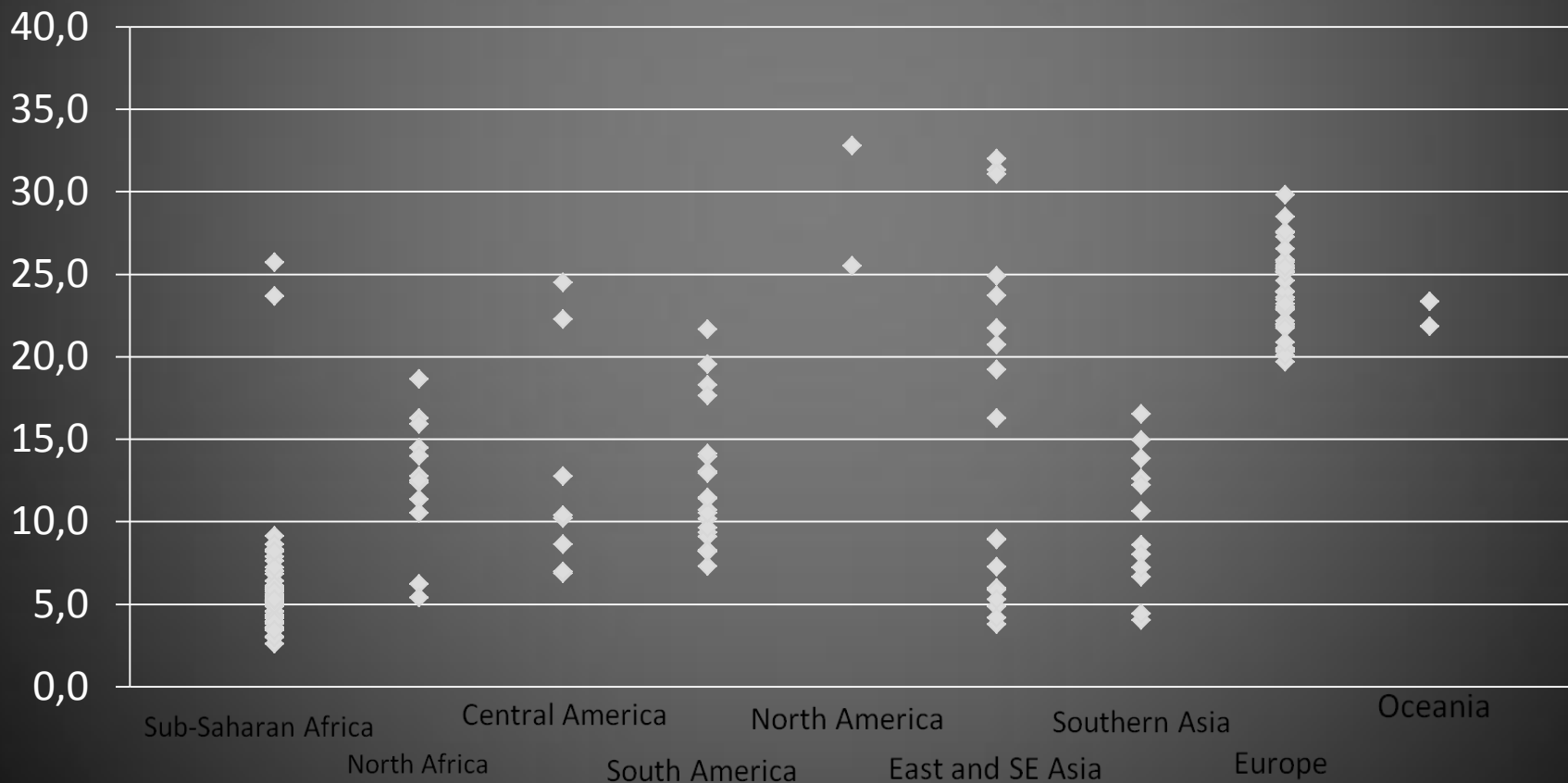
- To improve resource efficiency (output per unit of land, water, nutrients, energy)
- To sustainably manage grazing land
- To substantially reduce nutrient and energy losses from livestock waste

Relationship between total greenhouse gas emissions and milk output per cow

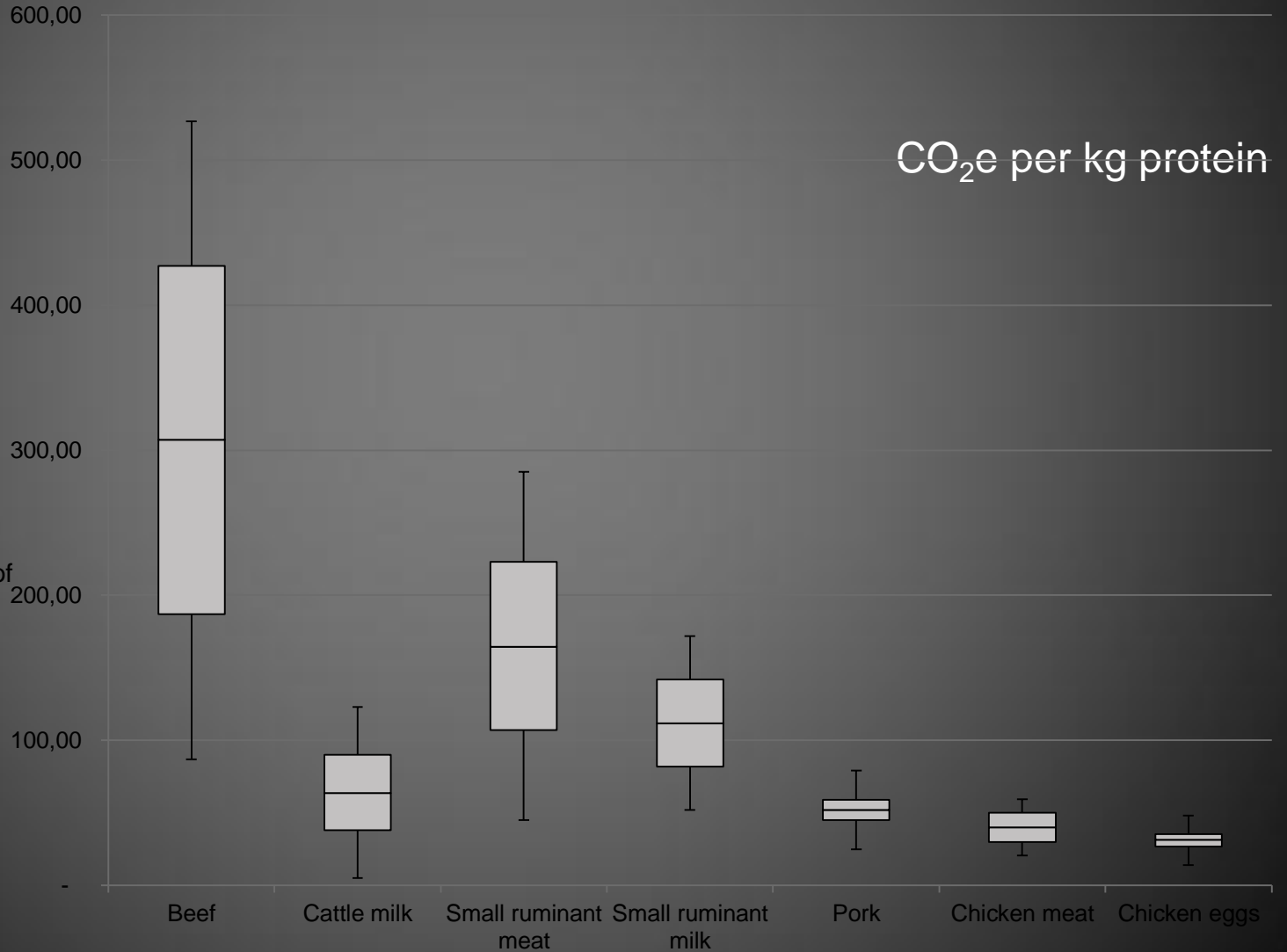


Inter-country comparison of nitrogen use efficiency in dairy production

(Share of ingested N found in milk and meat)



Emission intensities

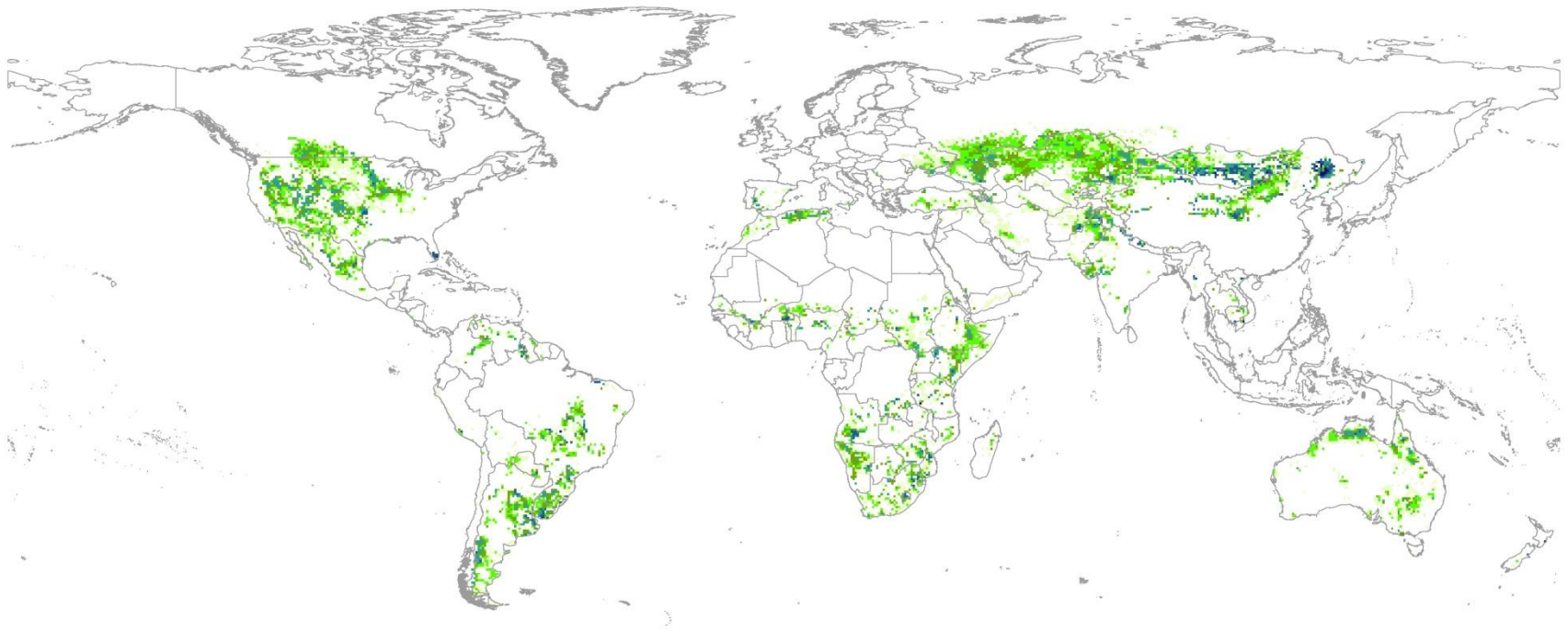


90% of Prod.

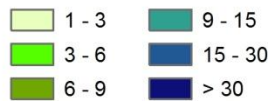
Average

50% of prod

Potential C sequestration in natural grasslands



Annual soil organic matter
sequestration rate (gC m⁻²)



If technical solutions exist, why aren't they applied?

Prices and incentives are wrong

- Subsidies often misdirected
 - Often favour high input use
 - Interactions are complex
- Externalities not considered
 - Positive externalities: providers of carbon sinks, water services, biodiversity protection
 - Negative externalities: water pollution, GHG emissions

If technical solutions exist, why aren't they applied?

Further complications

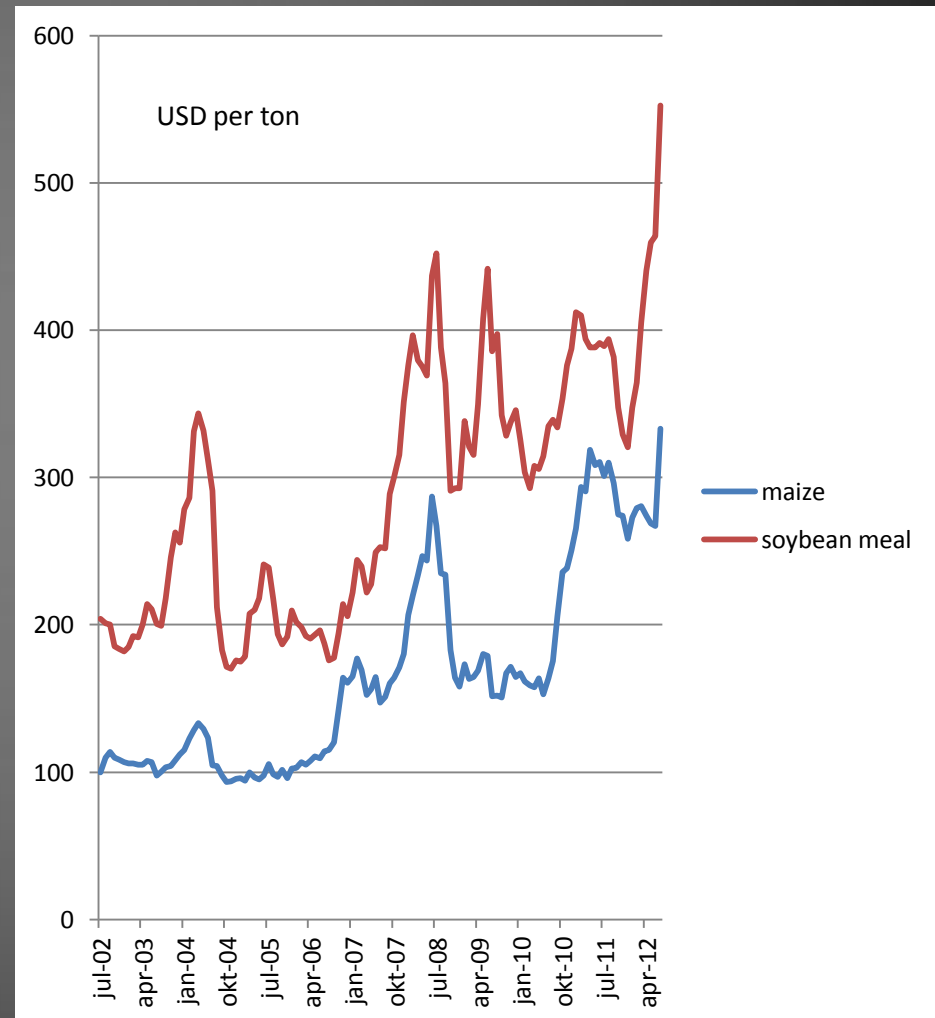
- Diversity of situations
- Remoteness – limited reach of authorities
- Many livestock keepers are poor – 750 million people depend on livestock for the livelihood

WHICH WAY FORWARD?

The game changer: resource scarcity

- Resource scarcity has become an economic reality – coping with scarcity an economic necessity
- Climate change affects agriculture like no other sector
- Livestock has the greatest potential to respond

Feed Prices over the last 10 years



Rational resource use

- Healthy human diets
- Full use of feed material with no alternative value (roughages, by-products, waste)
- Natural resource use efficiency
- Restoring value to grassland (payment-based environmental service provision)
- Let the polluter pay (zero discharge of waste)

Livestock, Resources and Poverty

- The poverty question is part of the Livestock-resource equation
- Investments and knowledge to:
 - Enable smallholders/pastoralists to intensify – needs production potential and markets
 - Create markets for environmental services from grazing (carbon, water, biodiversity)
 - Create alternatives to livestock

Sustainable Livestock

- Better Policies needed
 - To drive up resource efficiencies and to address externalities
 - To exploit the growth potential for poverty reduction
 - Simultaneously: counter pathogen threats, improve animal welfare
- Better Science needed
 - for a better and integrated understanding of “livestock and human needs”
 - To develop policy and technical options

Global Problems need a Global Response

A GLOBAL AGENDA IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT

Premises of the Agenda

- 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

A Global Agenda of Action

- **Focus:** Livestock sector's natural resource use – social, economic and health aspects to be incorporated
- **Nature:** Open, voluntary, informal, consensual, action-oriented, multi-stakeholder (public, private, civil society, research, international organizations)
- **Process:** Broad stakeholder consultations to create awareness, agree on objectives, priorities and concepts (ongoing)
- **Functions:** inform, consult, analyze, guide

A Global Agenda of Action

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
- **Towards zero discharge** – recycle and recover energy and nutrients from animal waste

A Global Agenda of Action

Steps

- Brasilia Consensus (May 2011): agreement on substance and multi-stakeholder nature
- Phuket Roadmap (Dec 2011): agreement on focus areas and main functions
- Endorsement by FAO's Committee on Agriculture (May 2012)
- Action programmes are being developed (workshops in Rome, Brasilia, Seoul)
- Nairobi (23 – 25 Jan 2013): Launch

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THANK YOU