GLOBAL AGENDA FOR SUSTAINABLE LIVESTOCK

CLIMATE & CLEAN AIR COALITION TO REDUCE SHORT-LIVED CLIMATE POLLUTANTS

Global Methane Initiative/ Climate and Clean Air Coalition

Agricultural Panel Discussion

29 March 2016, Washington

a CCAC supported project

Time	Item	Annotation
16:00	Welcome	Dr Theun Vellinga, moderator
16:00 – 16:20	Introduction to livestock and methane	Dr Theun Vellinga, Wageningen Dr Pierre Gerber, FAO
16:20 – 16:30	Mitigation of enteric fermentation	Dr Alex Hristov, Penn State University
16:30 – 16:45	<u>The Experience of Central America:</u> how to mitigate emissions from enteric fermentation and manure in policy and practice?	Dr Mario Cobos, Colegio de Posgraduados, Mexico
16:45 – 16:55	<u>The Experience of Vietnam:</u> Improved Manure Management: combining biodigestion and utilization of bioslurry as a fertilizer	Mr Steven von Eije, SNV, Vietnam
16:55 – 17:05	<u>The Experience of Bangladesh:</u> Development of National Policy and Action Plan for Integrated Manure Management in Livestock	Dr Kahn Shahidul Huque, Bangladesh Livestock Research Institute
17:00 – 17:45	Discussion about potential of improvement of livestock production to contribute to SLCP reduction and co-benefits	Dr Pierre Gerber Dr Alex Hristov Dr Mario Cobos Mr Steven von Eije Dr Kahn Shahidul Huque Dr Christopher Voell (US EPA)

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Livestock, Enteric Fermentation and Manure Management Components

Livestock and short lived climate pollutants

29 March 2016, Washington

Theun Vellinga, Pierre Gerber

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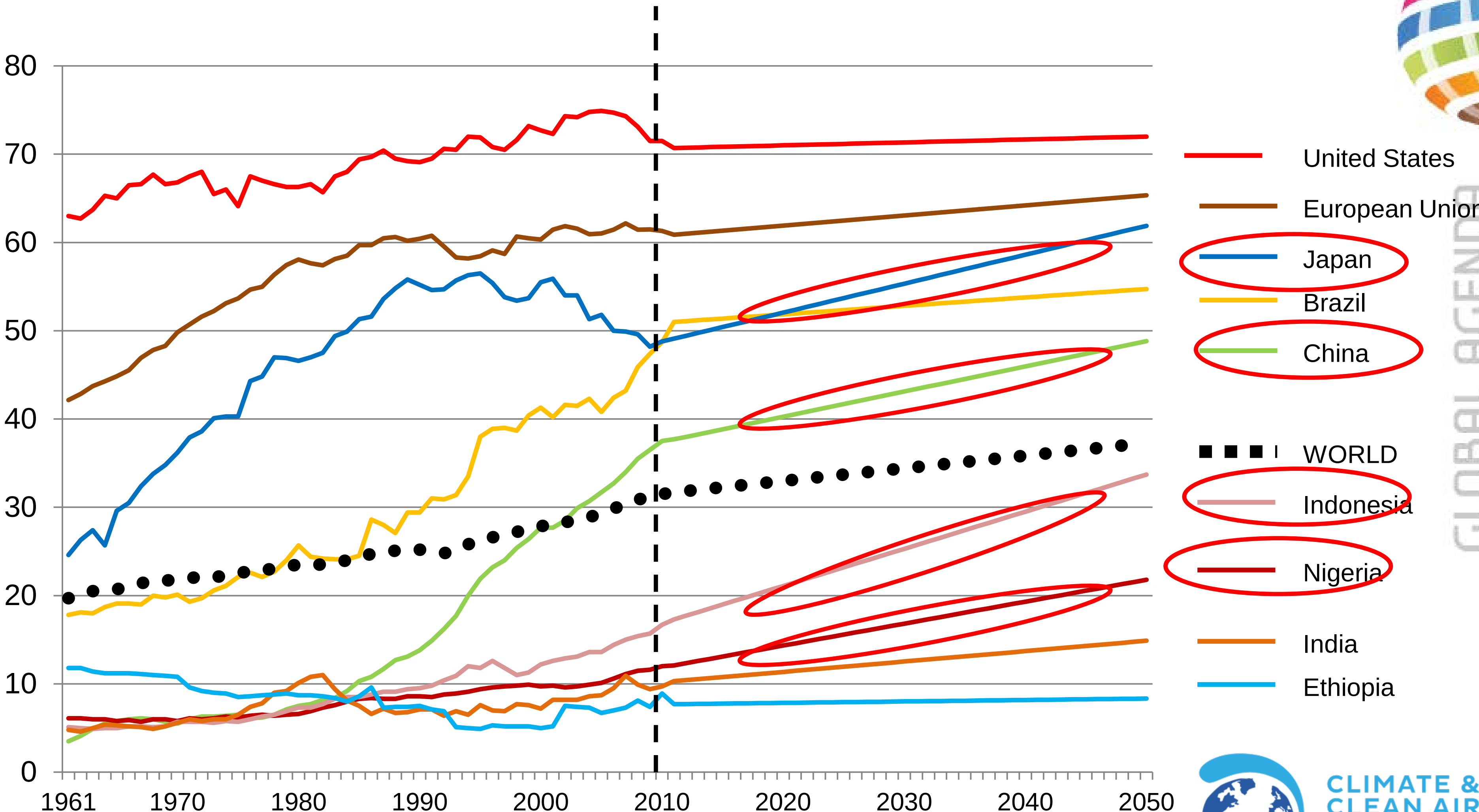
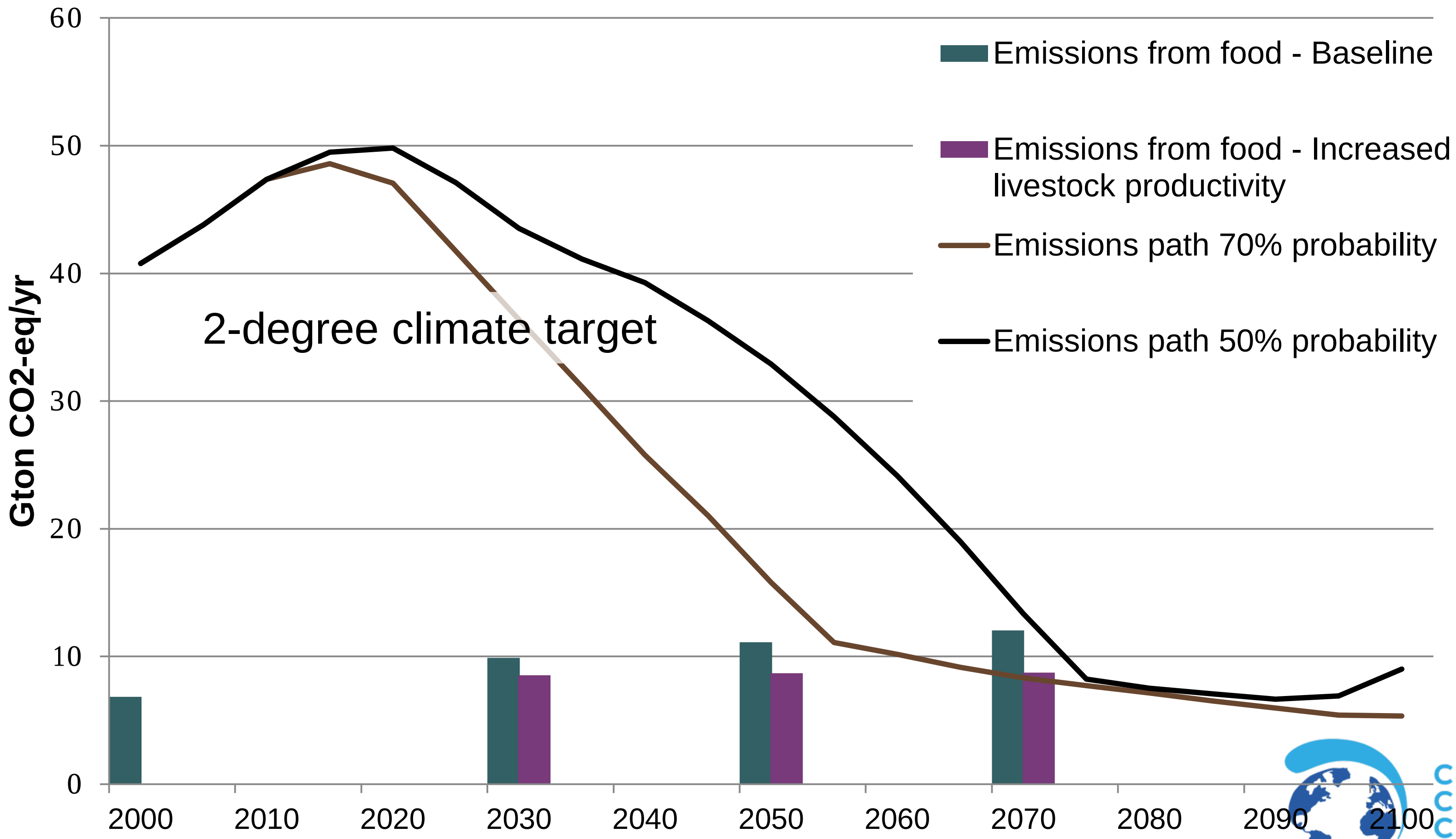
Trends in animal product demand



Note: The Alexandratos & Bruinsma 2012 projections covered 2006-2050. Their trend result was carried forward here from the FAOStat actual data point for 2011.
Source: J. Ranganathan *et al., Shifting Diets,* Installment 11 of the *World Resources Report,* WRI, *forthcoming.*

WRI, 2015; based on FAO, 2015, and Alexandratos & Bruinsma, 2012

The “grand challenge”



Source: Hedenus, Wirsenius, Johansson (2010)

Methane emissions

- The sector emits 3.1 Gt CO2-eq of CH4 per annum, or 44 percent of anthropogenic CH4 emissions
- 2.7 Gt for enteric methane only
  - 1.9 Gt from cattle (mostly from beef – 1.3 Gt)
  - 0.5 Gt from buffalo
  - 0.2 Gt from small ruminants
- 0.4 Gt for manure management
  - Mainly from liquid manure storages

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Source: FAO - GLEAM 2013

A loss of energy

- enteric fermentation :
  equivalent to 144 Mt oil equivalent per year
- manure management:
  equivalent to 29 Mt oil equivalent per year

Source: FAO 2013

Manure management

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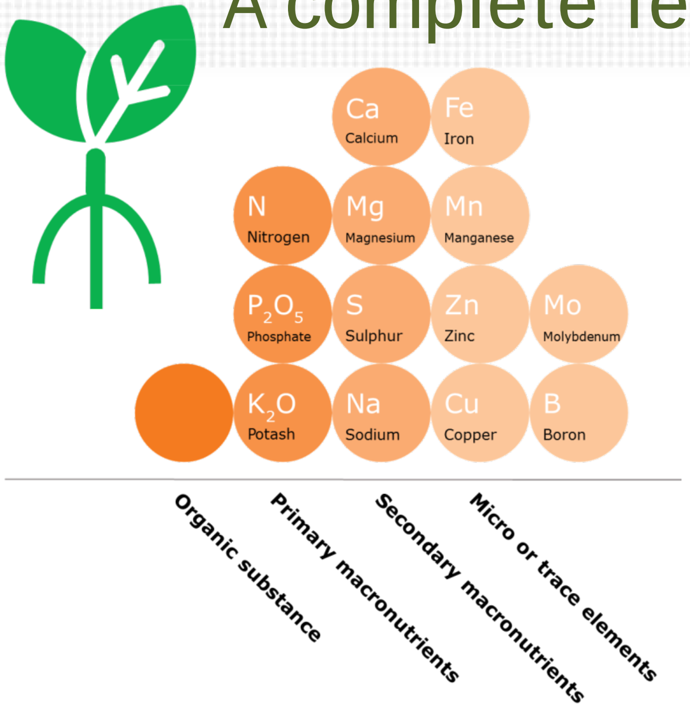
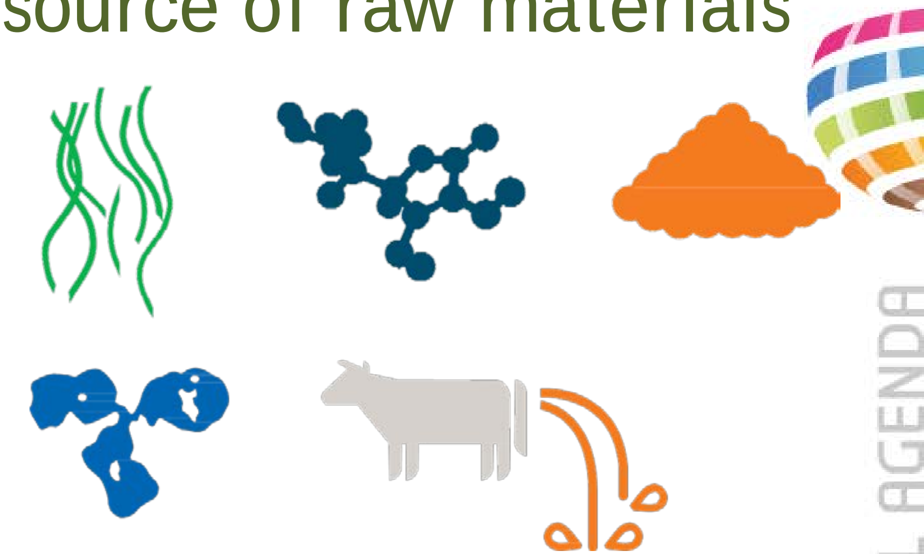
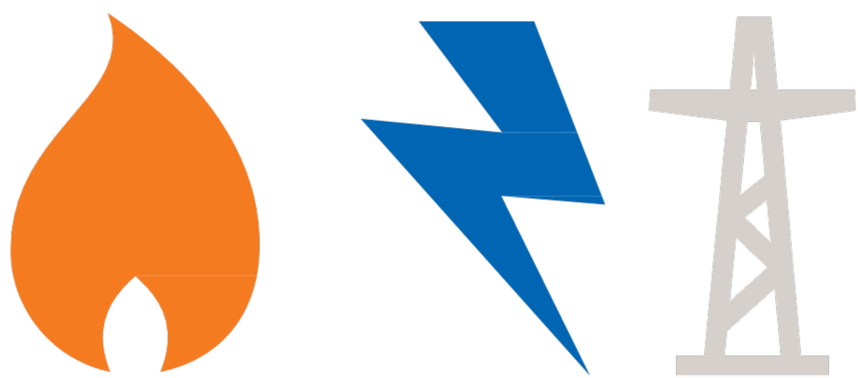
A complete fertilizer



A source of raw materials

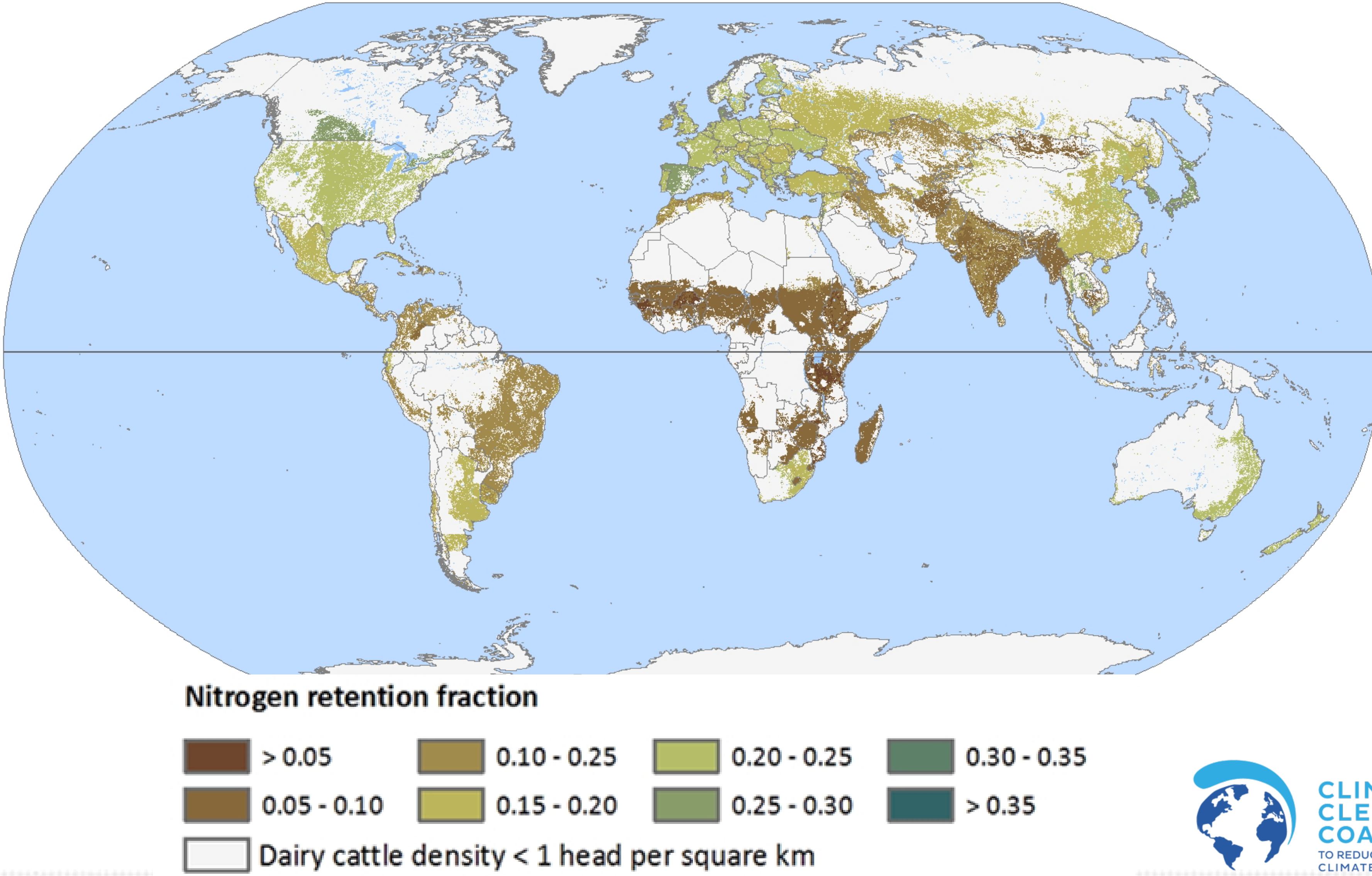




A source of energy

Biogas production = mitigation?

Manure is a valuable resource



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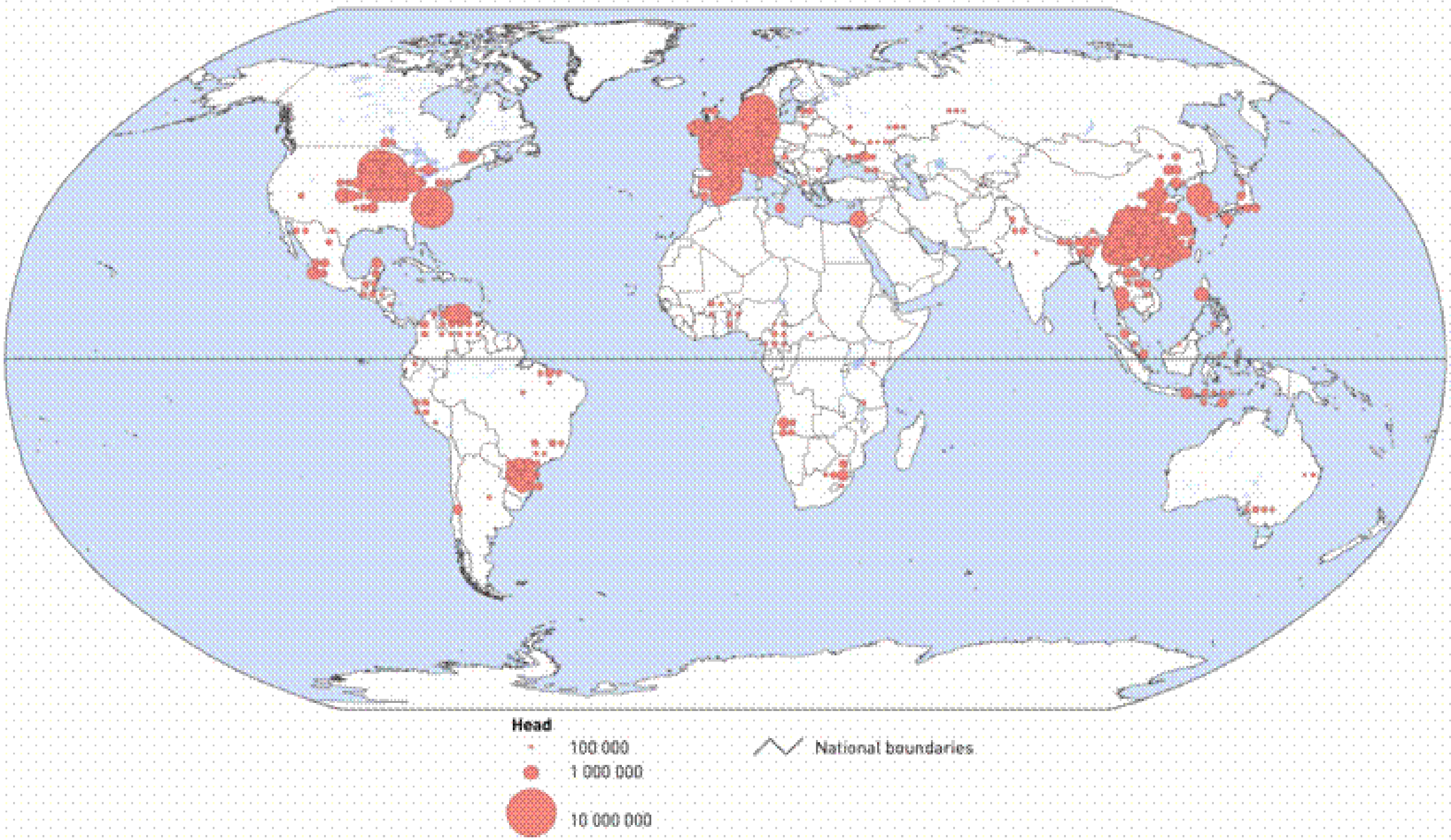
Source: FAO - GLEAM 2013

Pigs and poultry concentrations



Source: FAO - GLEAM 2013

Solving barriers in manure management

- **Awareness & knowledge:** development of a knowledge infrastructure for farmers, extension workers, private sector and policy makers
- **Coherent policies:** higher priority to fertiliser value, coherence between with other drivers: biogas, public health, pollution.
- **Credit facilities:** improve access to credits. Small investments can have a large impact.
- **Customised solutions:** simple facilities and equipment can be very effective

Enteric fermentation

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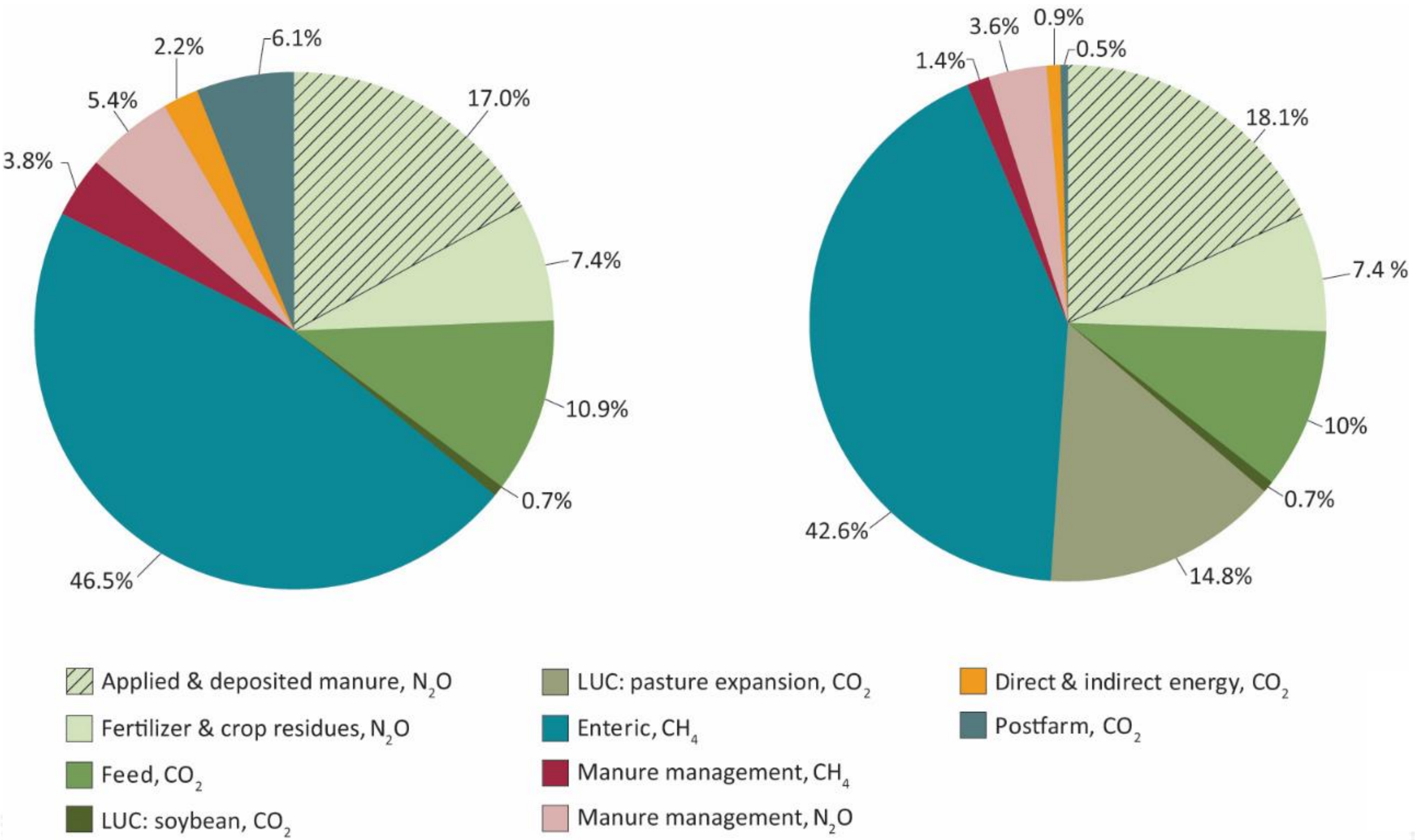
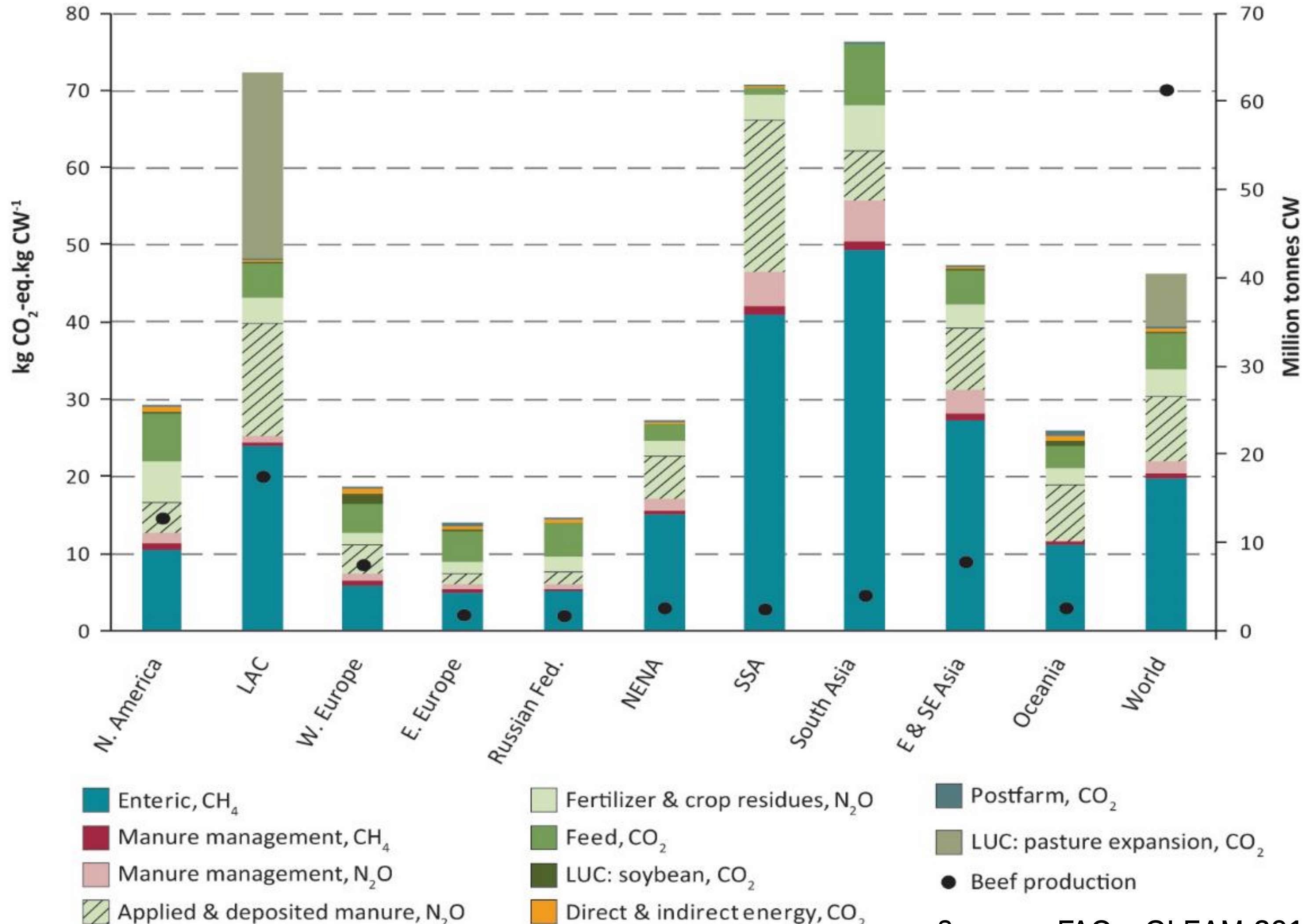
Enteric methane emission

Relative contribution of life-cycle phases Global – cattle milk (l) and beef (r)



Source: FAO - GLEAM 2013

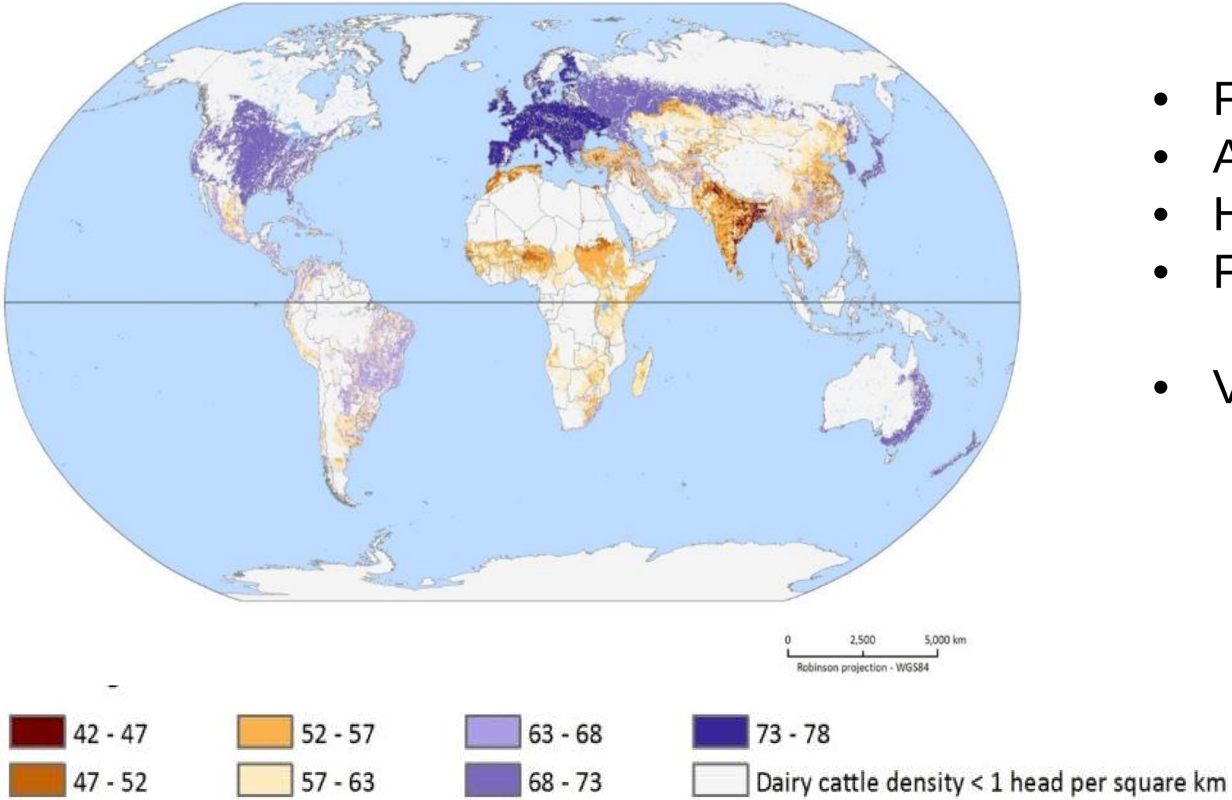
Regional variation in beef production and GHG emission intensities



Source: FAO - GLEAM 2013

What drives enteric methane emissions?

Average feed digestibility for dairy cattle



- Feed quality
- Animal productivity
- Herd structure
- Food waste

- Volume of production

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What are the main available strategies for the reduction of enteric methane emission intensities?

- **Animal level: increased efficiency**
  - feed digestibility and balancing (range management)
  - feed additives
  - animal health
  - genetics (productivity and resilience traits)

- **Herd level: maintenance to production ratio**
  - age at first calving
  - replacement rates of milked animals
  - age at slaughter for male animals
  - semen sexing

- *No system change required*
- *Strong synergies with productivity gains, income and food security*
- *Strong synergy with natural resource use as a whole*
- *Need to be tailored and combined in view of specific farming systems, constraints and opportunities*
- *Need to be tested on the ground*

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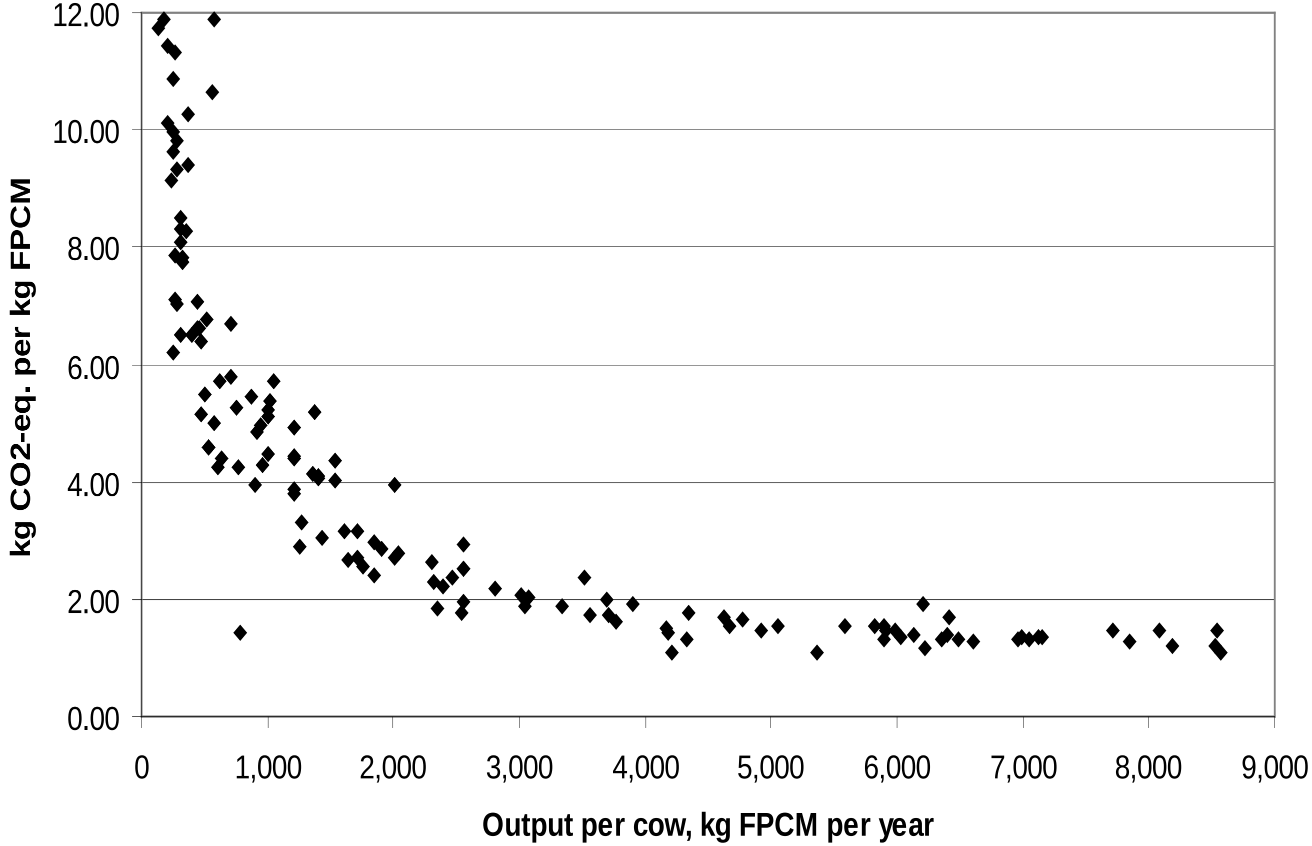
A strong link between methane emission Intensity and yield



Gerber et al., 2011

Thank you

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