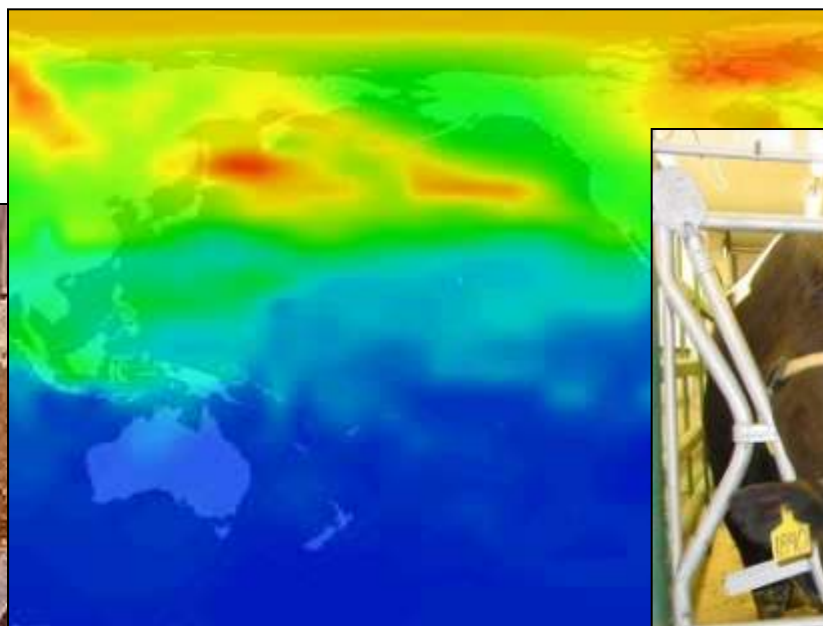


Sustainable Intensification: How to satisfy the rising demand for animal protein without depleting natural resources

GRSB, Sao Paulo, Brazil, Nov 2 '14



Frank Mitloehner, PhD

Professor & Air Quality Specialist

Dept Animal Science

University of California, Davis

Facts or Fiction on Livestock and Climate Change?

- Livestock produces 18% of all anthropogenic GHG globally
- Livestock produces more GHG than transportation
- Livestock produces even more than 18%, namely 51% of all GHG globally (Worldwatch Institute)
- Grazing systems produce less GHG than conventional animal production in confinement systems

“Livestock’s Long Shadow” (FAO, 2006)

- “The Livestock sector is a major player, responsible for 18% of GHG emissions measured in CO₂e. This is a higher share than transport”





Om Max

Vår Mat

Kampanjer

Nyheter & Press

Nöje & Tävlingar

Jobb

Restauranger

Max & Mijön

Max klimatsatsning

Koldioxidkompensation

Utmärkta burgare

Nu ännu godare

Inte torrk

Vindkraft

Frågor & svar

Metod

Övrigt miljöarbete

Max Radio

Kontakta

Din Maxrestaurang



Kycklingsburgare Classic

0,4
kg CO₂e



Frisco Cheese'n'bacon

1,8
kg CO₂e



Fiskburgare

0,2
kg CO₂e



UTMÄRKTA BURGARE

Nu redovisar vi koldioxidutsläppet för alla produkter



Max klimatsatsning

Om Max, miljökalkyl, Läs mer



Koldioxidkompensation

Vi kompenserar med träplantering



Utmärkta burgare

Koldioxidräkning för alla produkter



Nu ännu godare

Burgare med god mjölksmaka



Inte torrk

Färdiga fiskrätter och 8g CO₂e



Vindkraft

Max har bytt till vind-el



Frågor & Svar



Metod

EN ISO 14064-1:2006



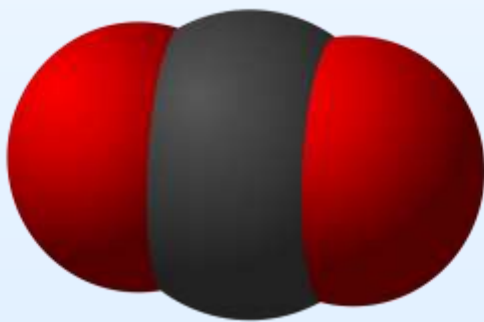
Övrigt miljöarbete



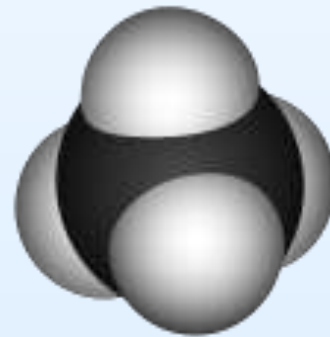
GHG & GWP

Global Warming Potential (GWP) of Main GHG

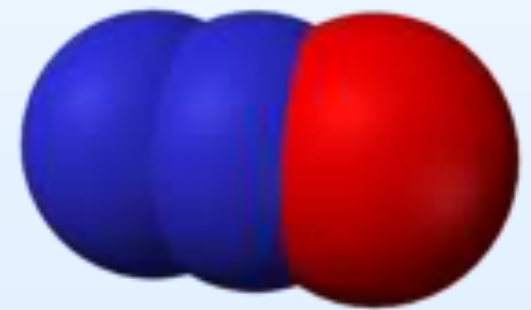
- Carbon Dioxide, CO₂ 1
- Methane, CH₄ 25
- Nitrous Oxide, N₂O 298



CO₂ - Carbon Dioxide

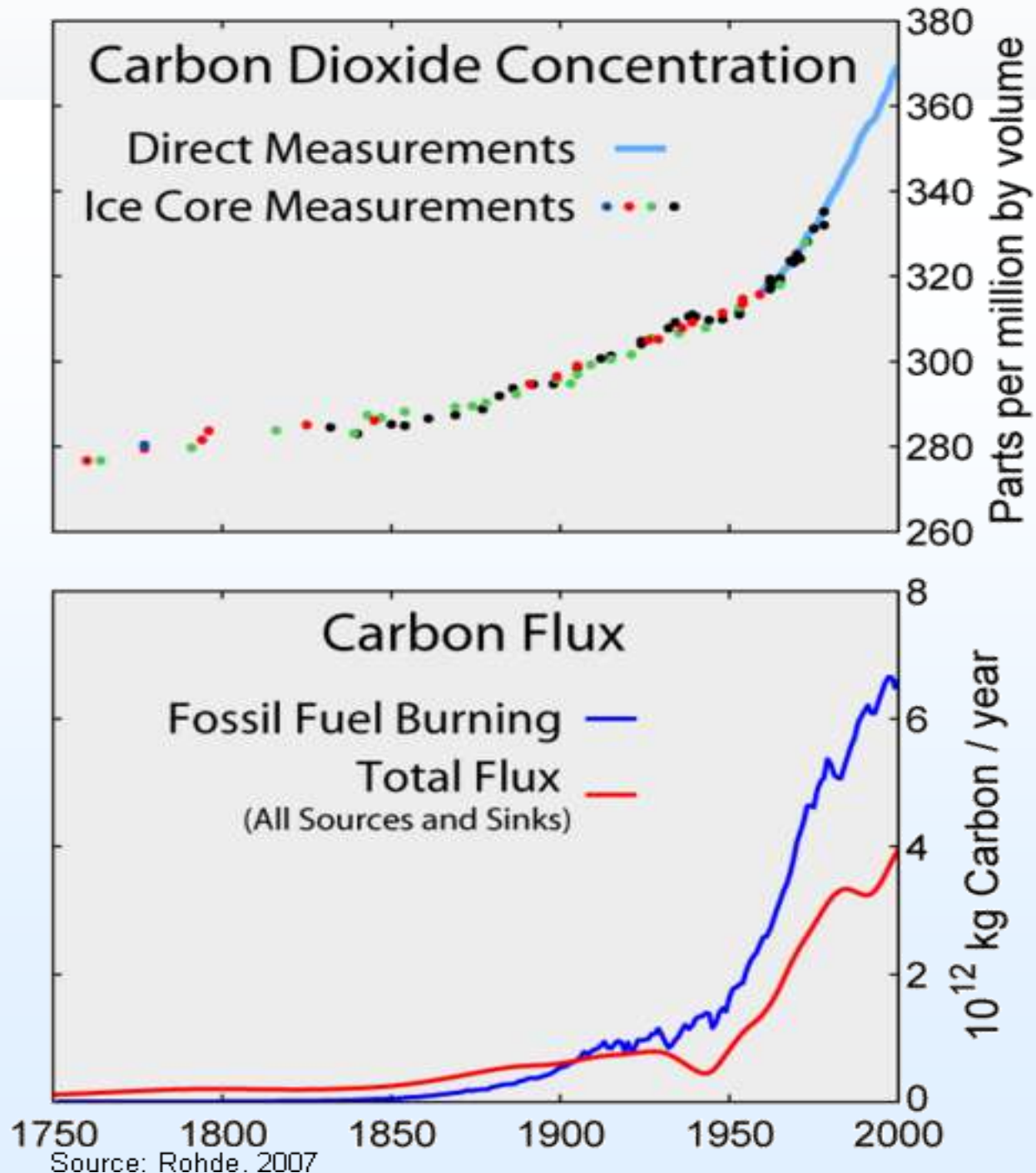


CH₄ - Methane

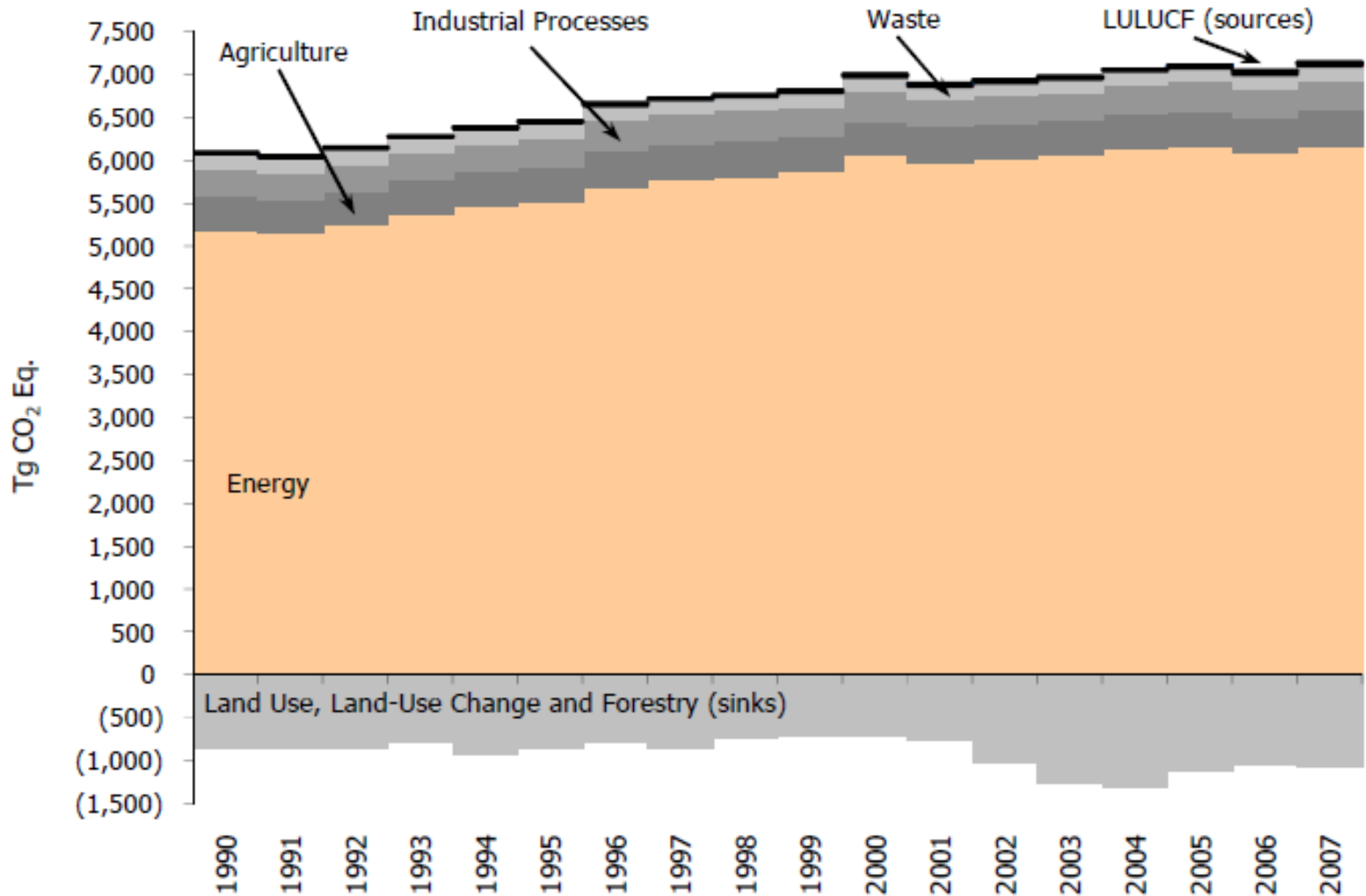


N₂O - Nitrous Oxide

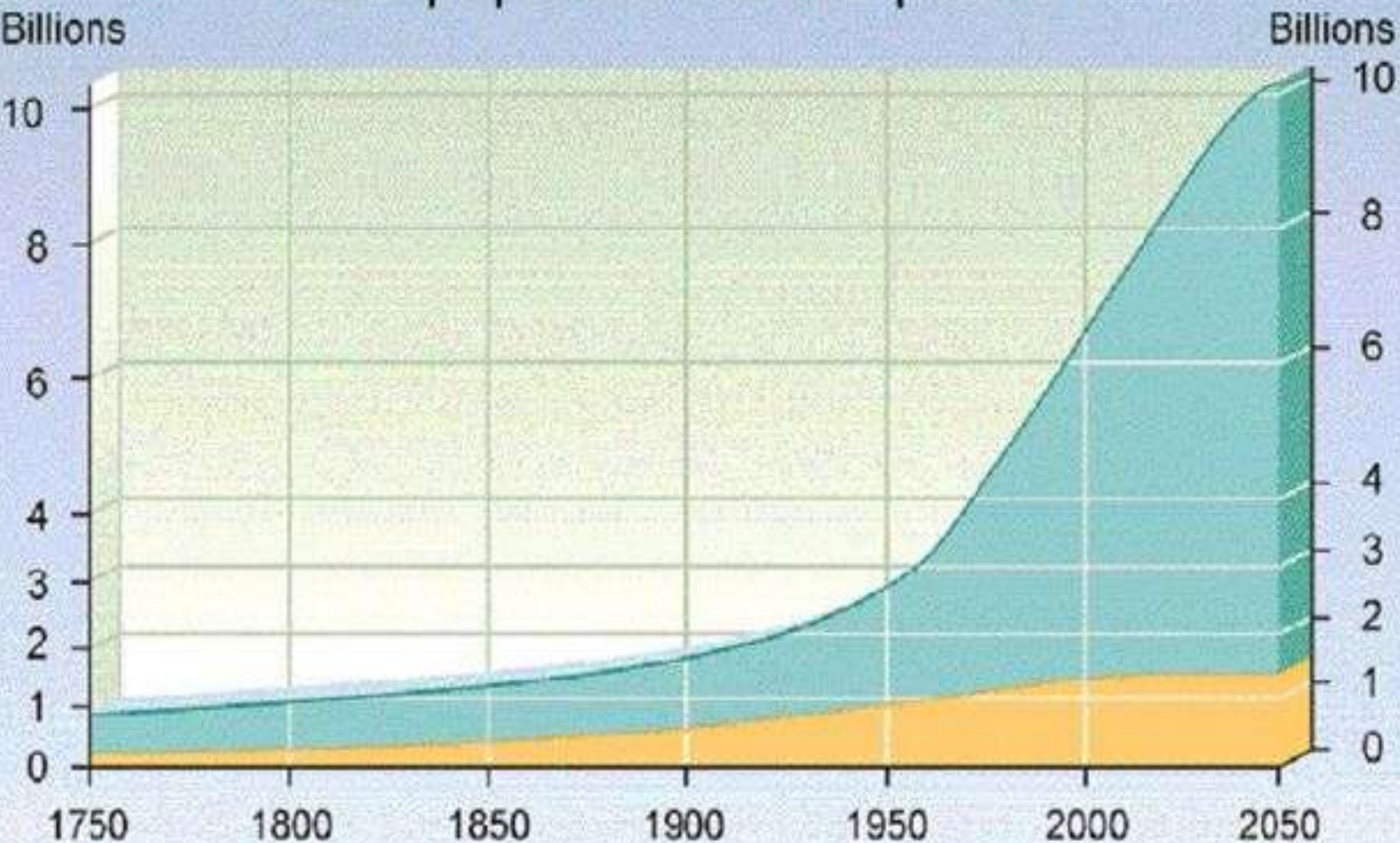
Carbon Dioxide and Carbon Flux



U.S. – the big GHG picture

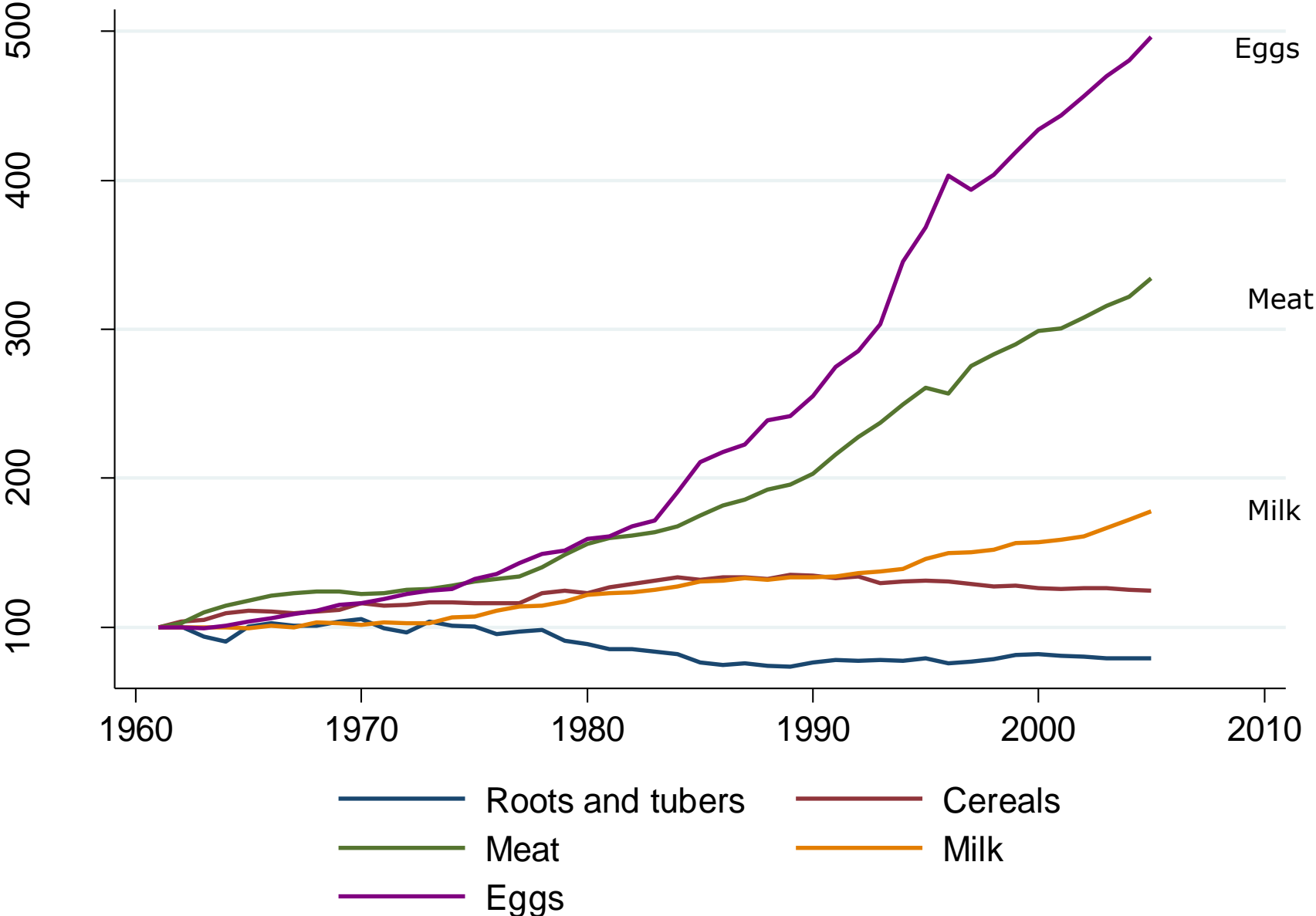


World population development



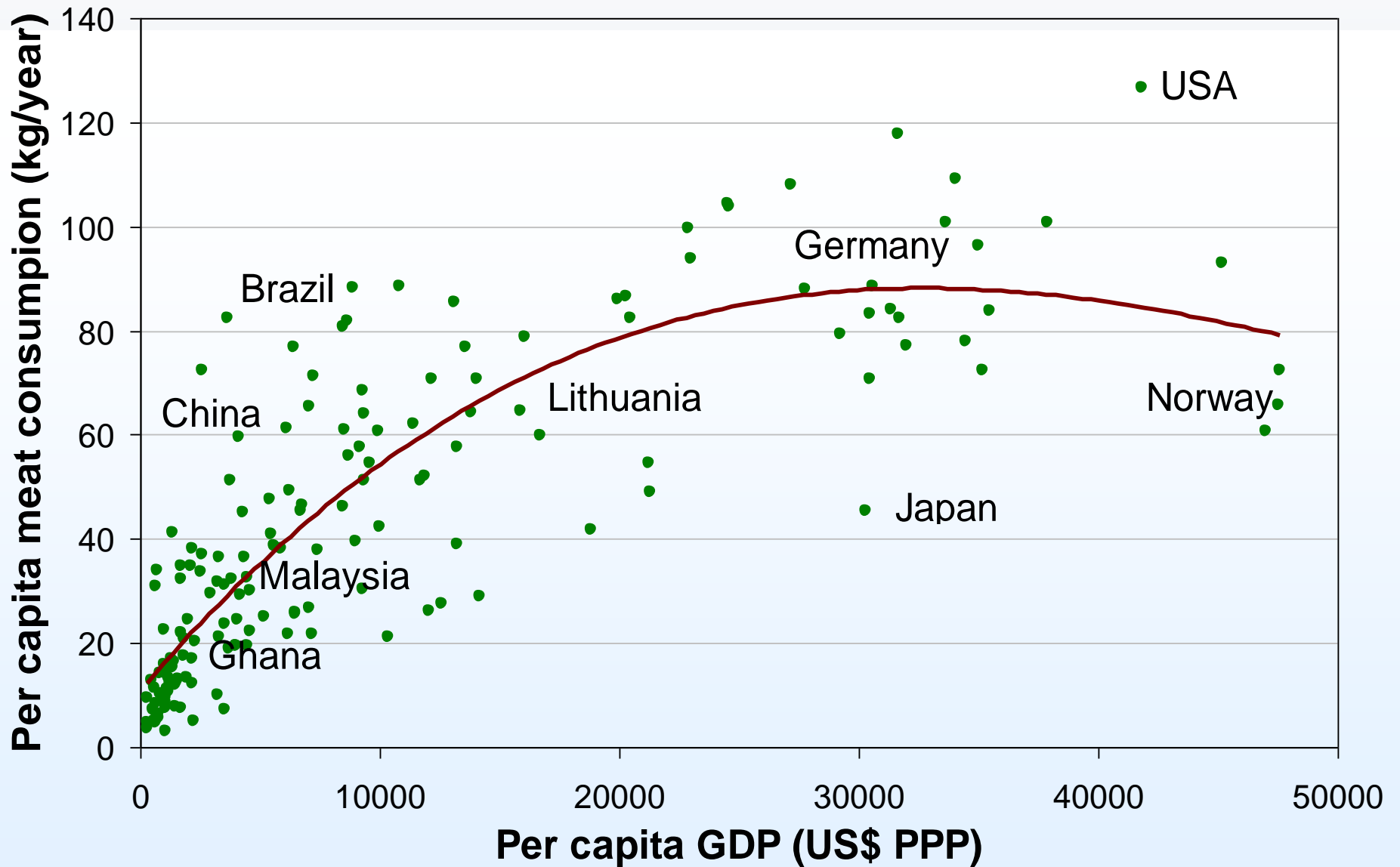
Developing countries
Industrialized countries

Consumption is growing rapidly in developing countries ...

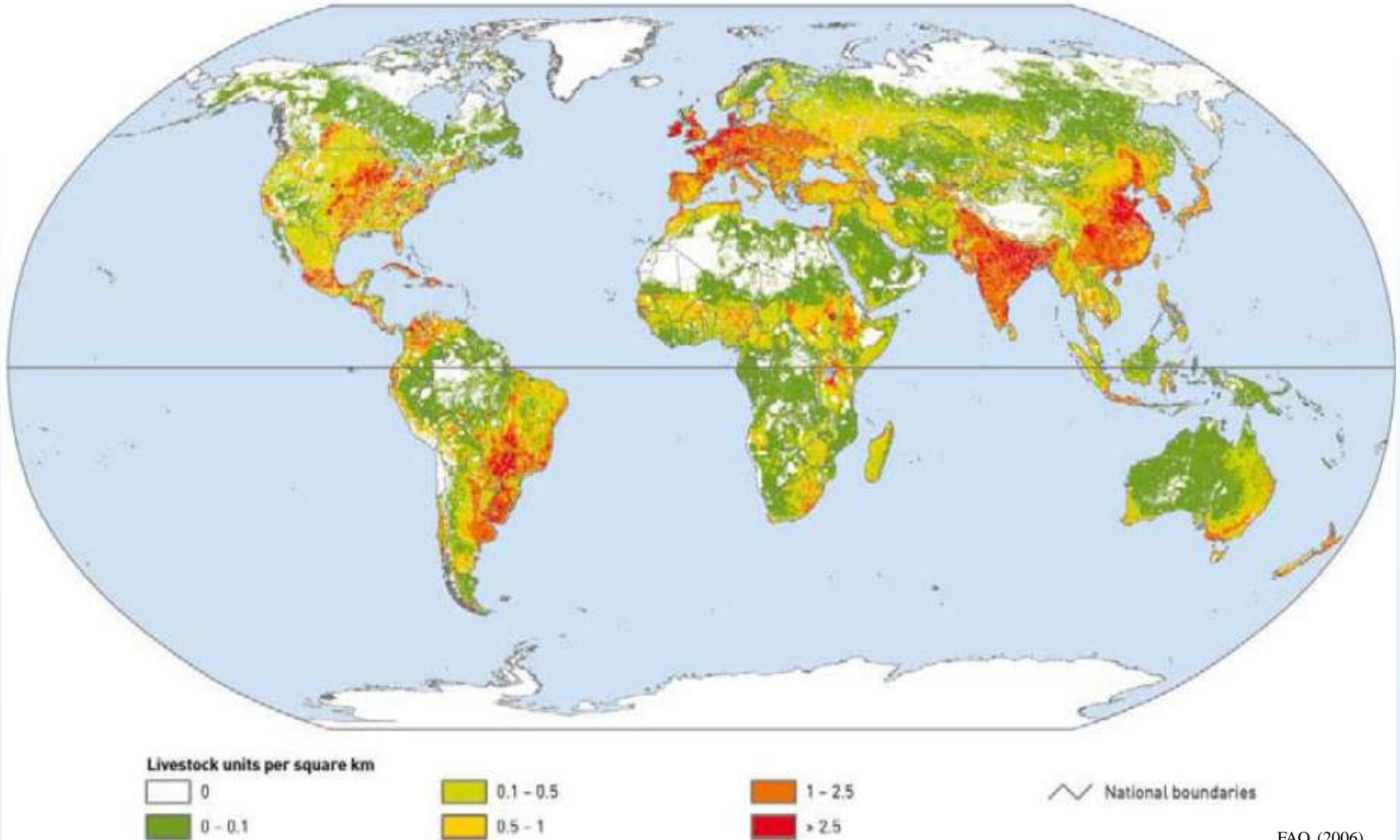


Per caput consumption of major food items in developing countries - kg per caput per year (index numbers 1961=100)

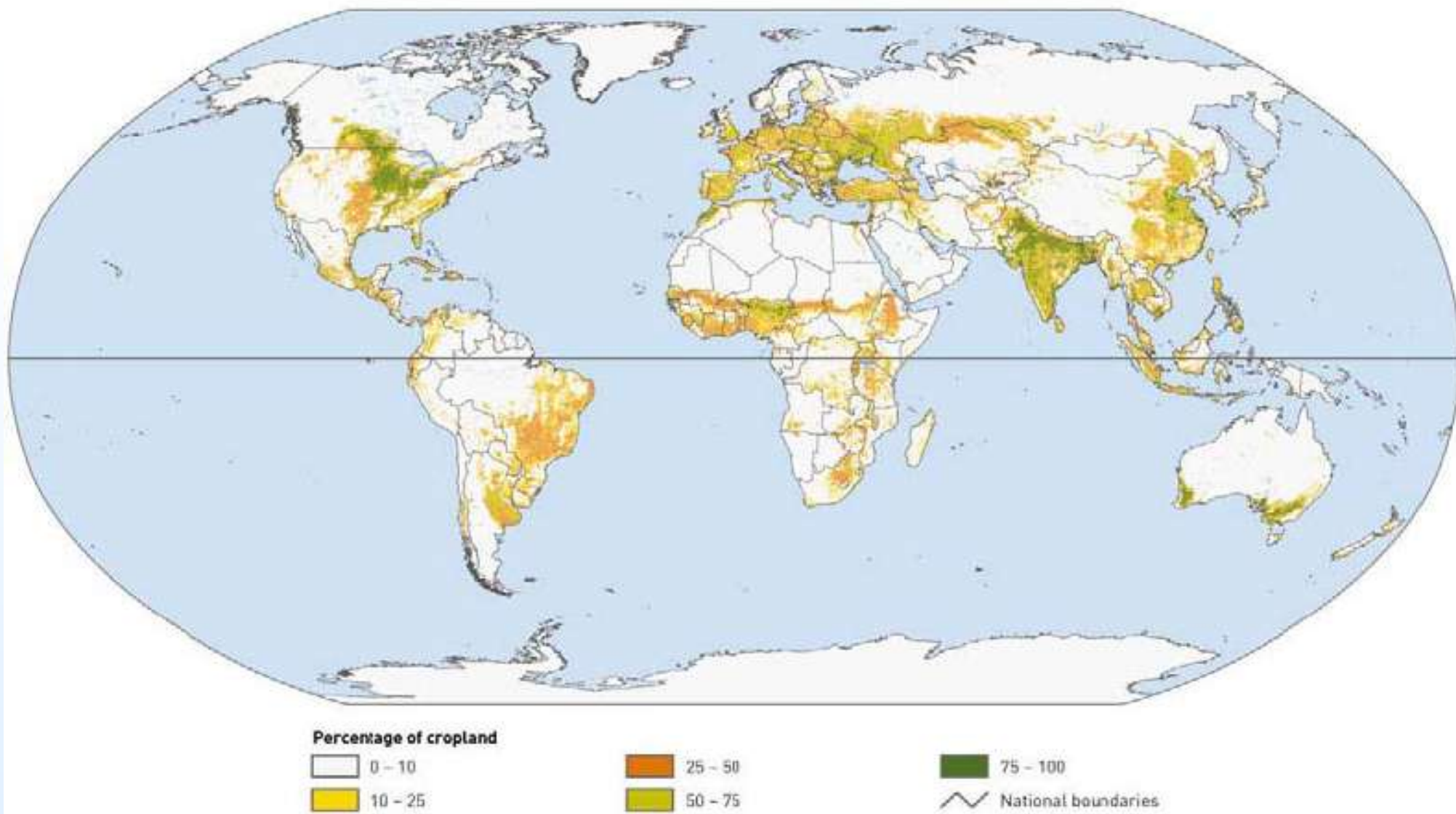
... driven by incomes ...



Global livestock distribution

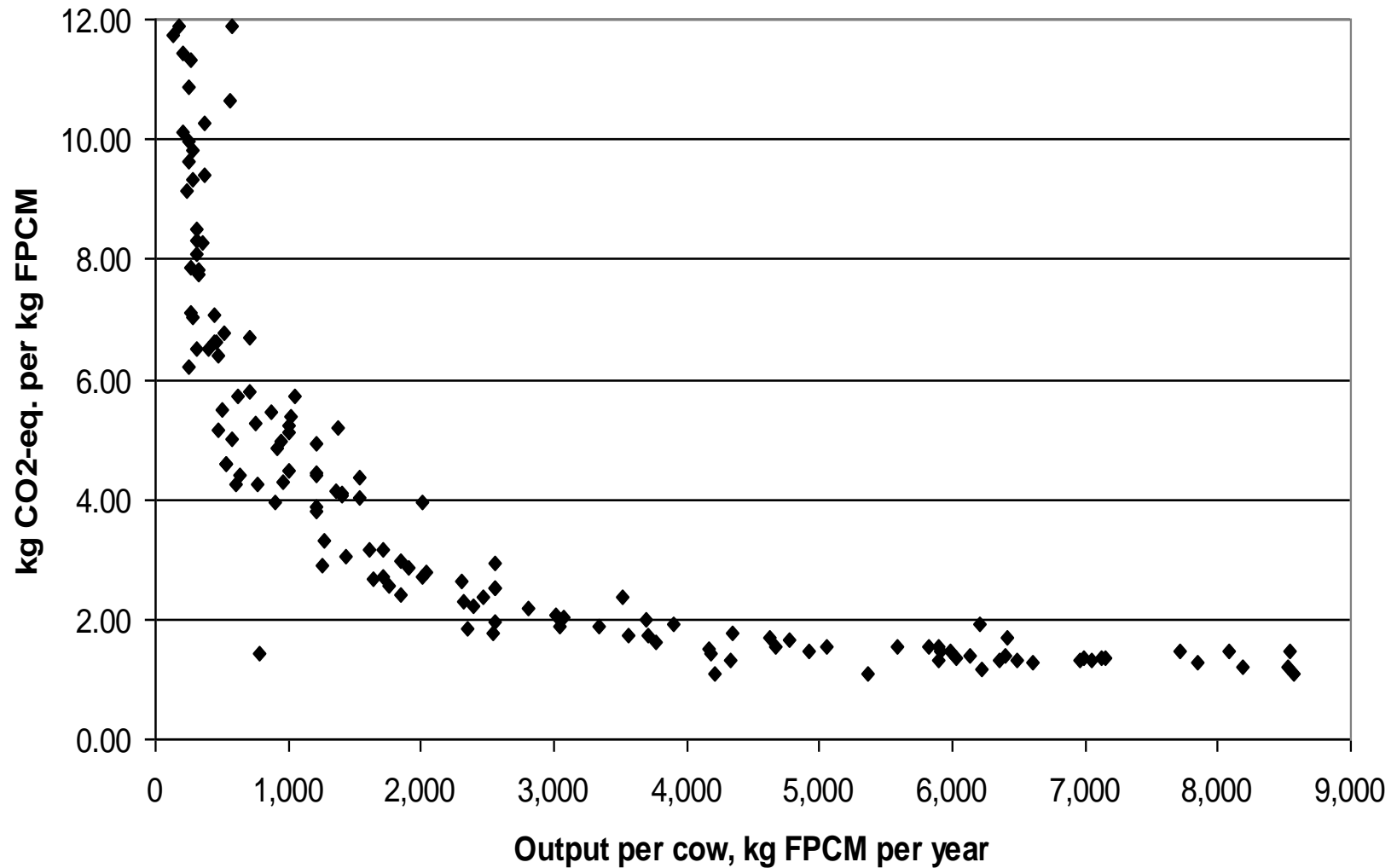


Distribution of cropland



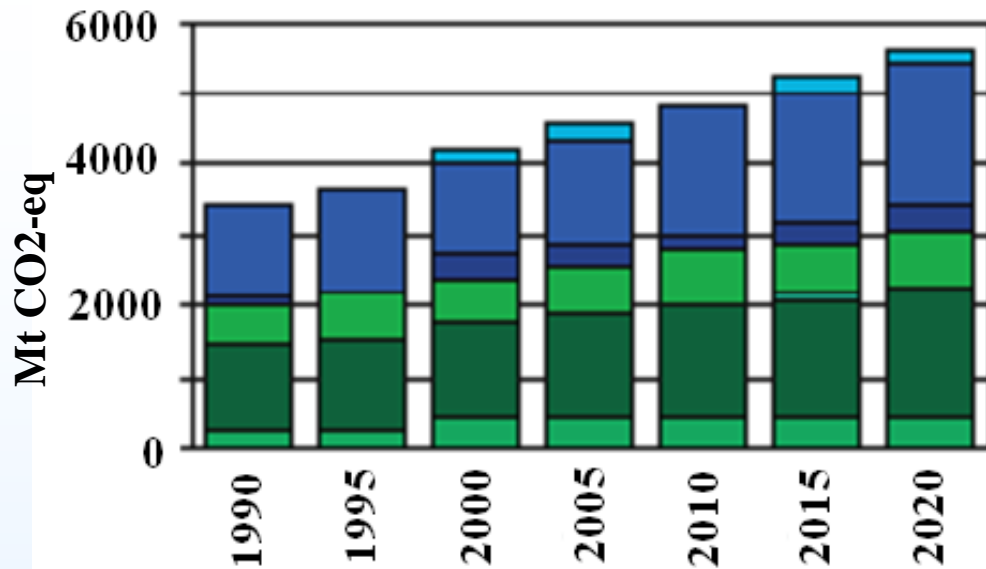
Source: FAO, 2006f.

Relationship between total greenhouse gas emissions and milk output per cow

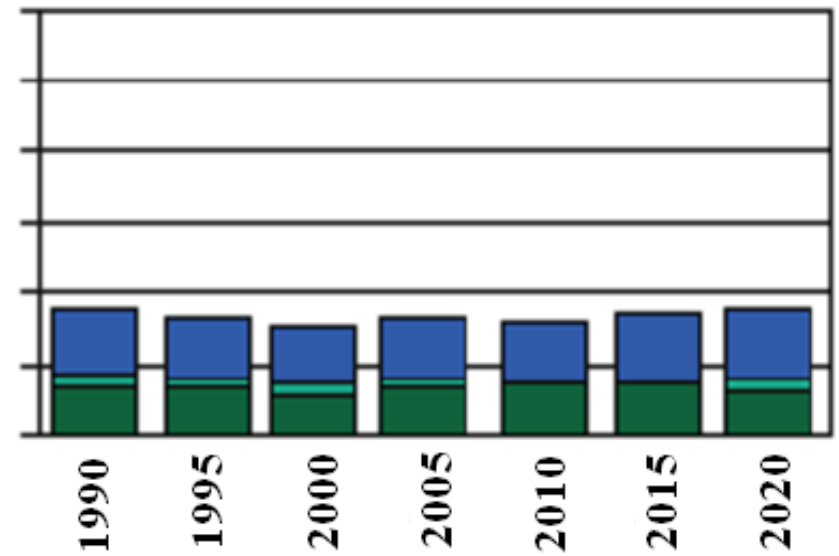


GHG by Regions

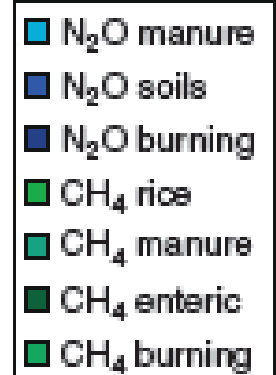
Developing Regions

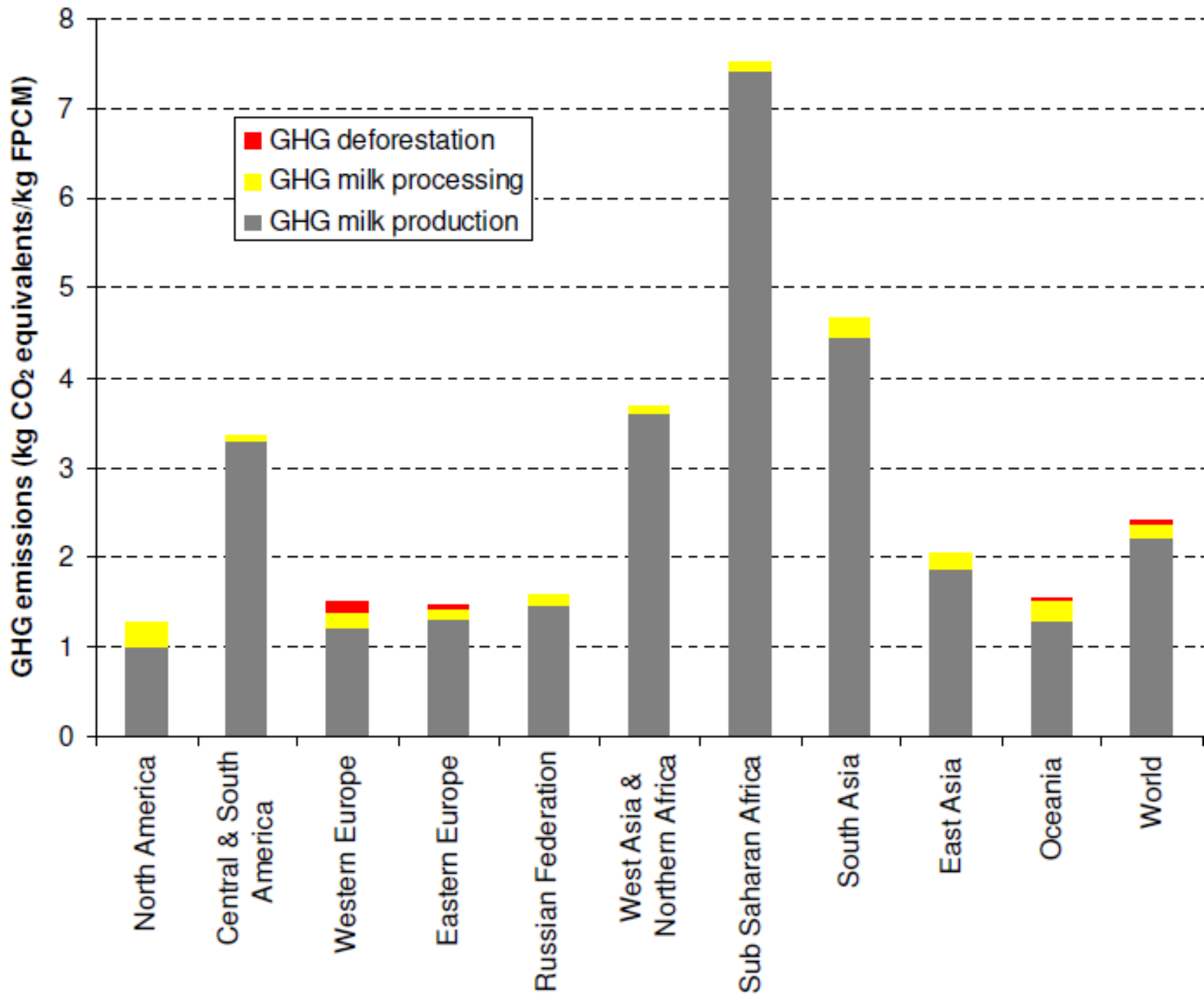


Developed Regions

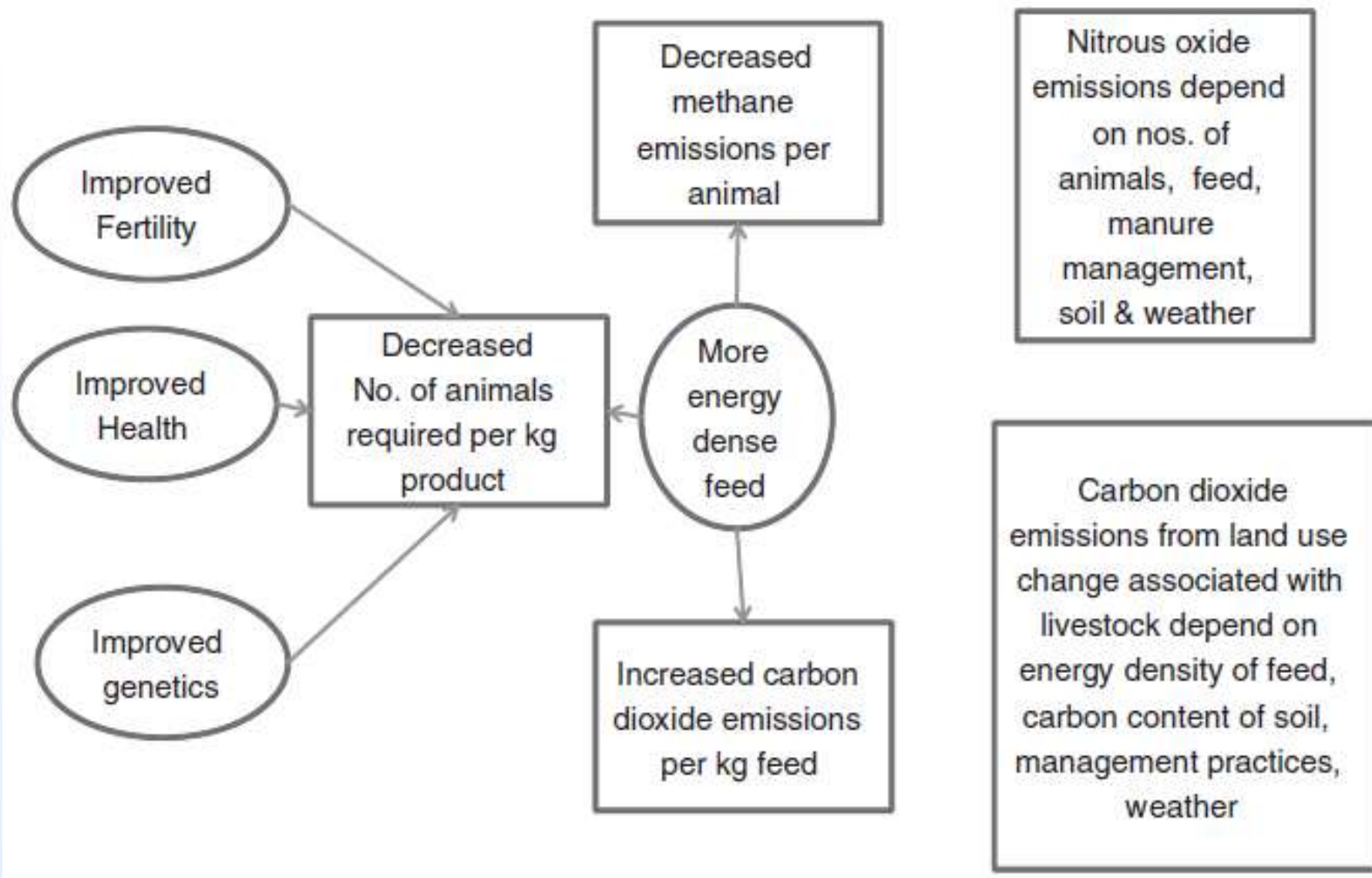


Time (years)





Mitigation: interventions to improve productivity



US Beef trends

- In 1970, the US had 140 Million head of beef
- By comparison, today there are 90 Million head
- In both 1970 and 2010, 24 Million tons of beef were produced

US Dairy trends

- Today, there are 9 million dairy cows in the US, 16 million fewer than existed in 1950.
- Even though cow number have decreased dramatically (1950 versus 2013), milk production nationally has increased 60 percent.
- The carbon footprint of a glass of milk is 2/3 smaller today than it was 70 years ago.

China Swine Example

- China's five year plan focuses on making farms larger and more efficient
- Half of the world's pigs live in China
- 50 million sows w/ 20 piglets born alive
- Equals annual production of 1 Billion pigs
- Pre-weaning mortality causes 400 Million pigs to never make it to the market
- One more pig per sow would mean 1 Million tons of feed saved

Sustainable Intensification is key

- Production intensity enhances biological efficiency
- **Production intensity and emission intensity are inversely related**

There is no current internationally agreed methodology to measure the environmental performance of livestock supply chains



The objective

To develop methodologies and guidance to allow transparent, robust and fair measurement of environmental performance of livestock supply chains

- Science based life-cycle approaches
- Focus on tangible outputs
- Identifies opportunities to work with other international processes

Livestock Environmental Assessment and Performance Partnership



New Zealand Government

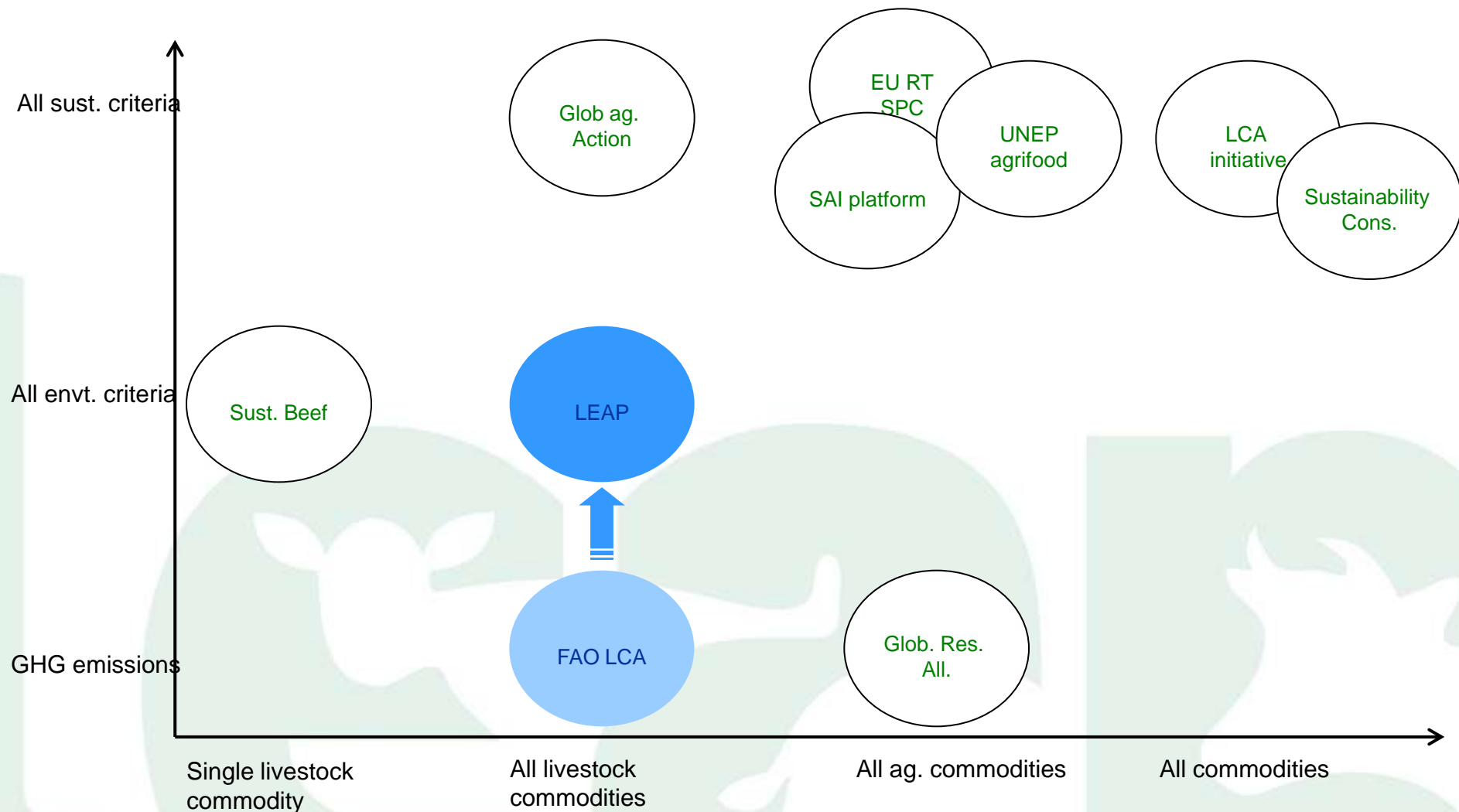


- LEAP brings together governments, the livestock industry, non-governmental and civil society organizations, leading researchers and inter-governmental organizations
- The FAO, as secretariat and host, will ensure that the project follows science-based and internationally recognized approaches

LEAP builds on existing initiatives

- Global Research Alliance
- EU Food Sustainable Consumption and Production Round Table
- Global Roundtable for Sustainable Beef
- Sustainability consortium
- SAI platform
- Global Agenda of Action
- UNEP - Sustainable production and consumption in the agrifood sector
- UNEP/SETAC International Life Cycle Initiative
- Common Carbon Footprint Approach for Dairy: The IDF guide to standard lifecycle assessment methodology for the dairy sector
- Carbon Footprinting of Animal Nutrition, Agri-BALYSE, Animal Change
- Sustainability consortium

LEAP vs other initiatives



The Actions of the Partnership

2012-2015



* TAG: Technical Advisory Group



UNIVERSITY OF CALIFORNIA

LET THERE BE

LIGHT

1868