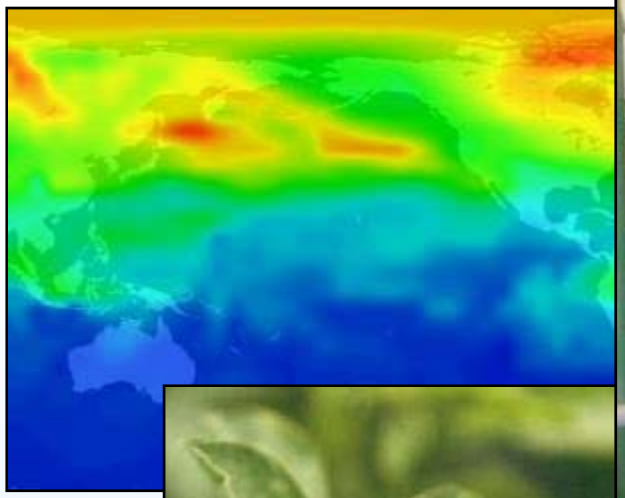
Facts and fiction about livestock industry affecting climate change



Frank Mitloehner, PhD
Assoc. Professor & CE Specialist
Dept Animal Science
University of California, Davis

Teaching & mentoring

NAEMS

National Air Emission Monitoring Study

Cal DEHRI

California **D**airy **E**nvironmental **H**ealth **R**esearch **I**nitiative

UTMÄRKTA BURGARE

Nu redovisar vi koldioxidutsläppet för alla produkter

Max klimatsatsning
Om Max miljöarbete. Läs mer.

Koldioxidkompensation
Vi kompenserar med trädplantering.

Utmärkta burgare
Koldioxidmärkning för alla produkter.

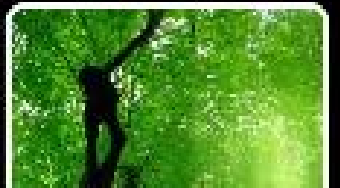
Nu ännu godare
Hamburgare med gott miljösamvete.

Into torsk
Hållbara fångstmetoder och låg CO2e.

Vindkraft
Max har tryck till vind-el.

Frågor & Svar

Metod



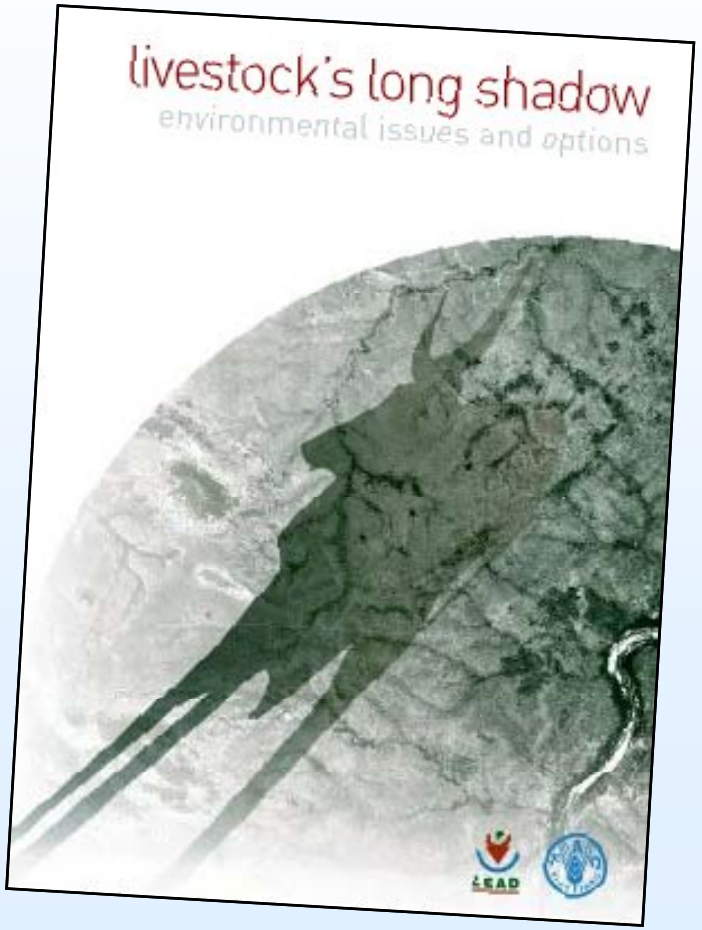
Övrigt miljöarbete

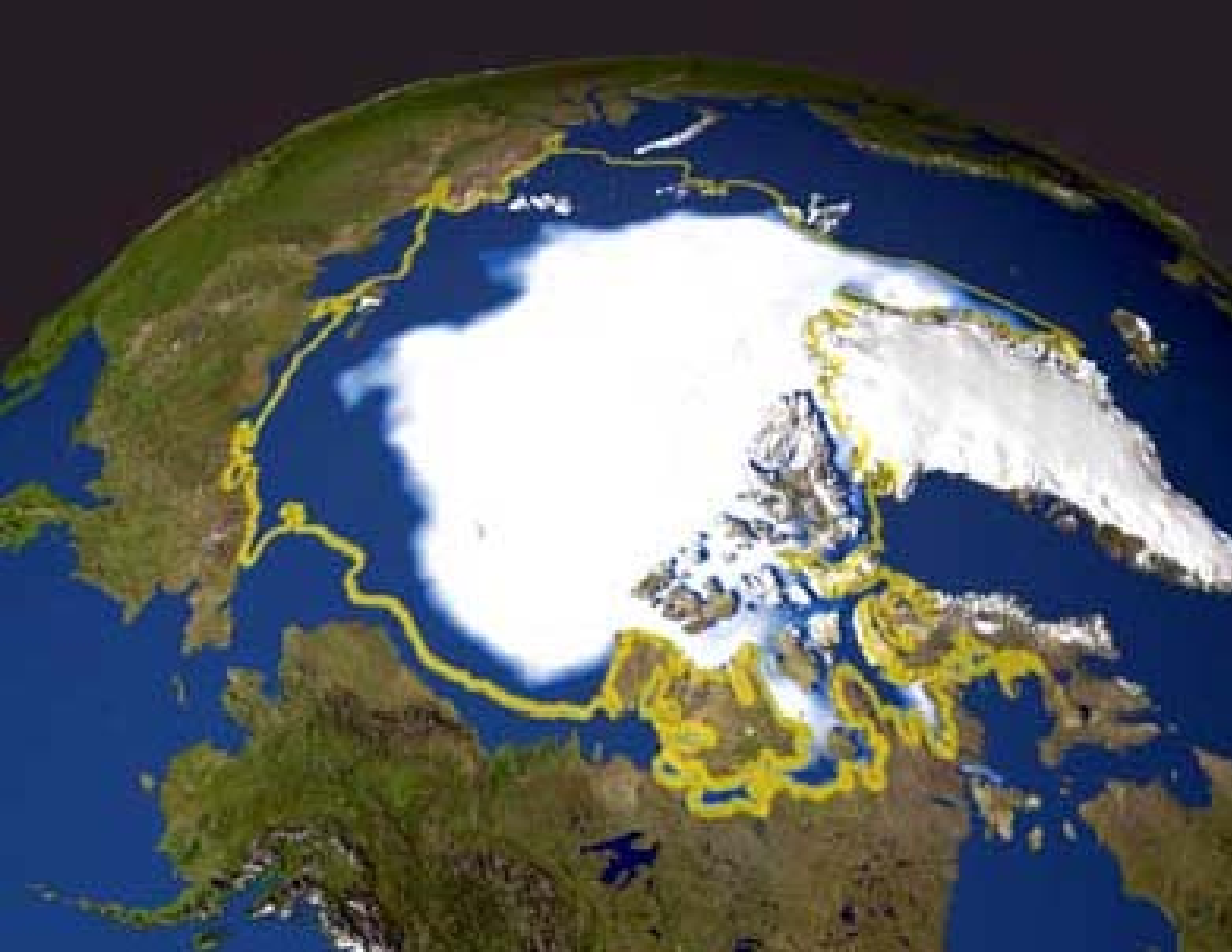
Facts or Fiction on Livestock and Climate Change?

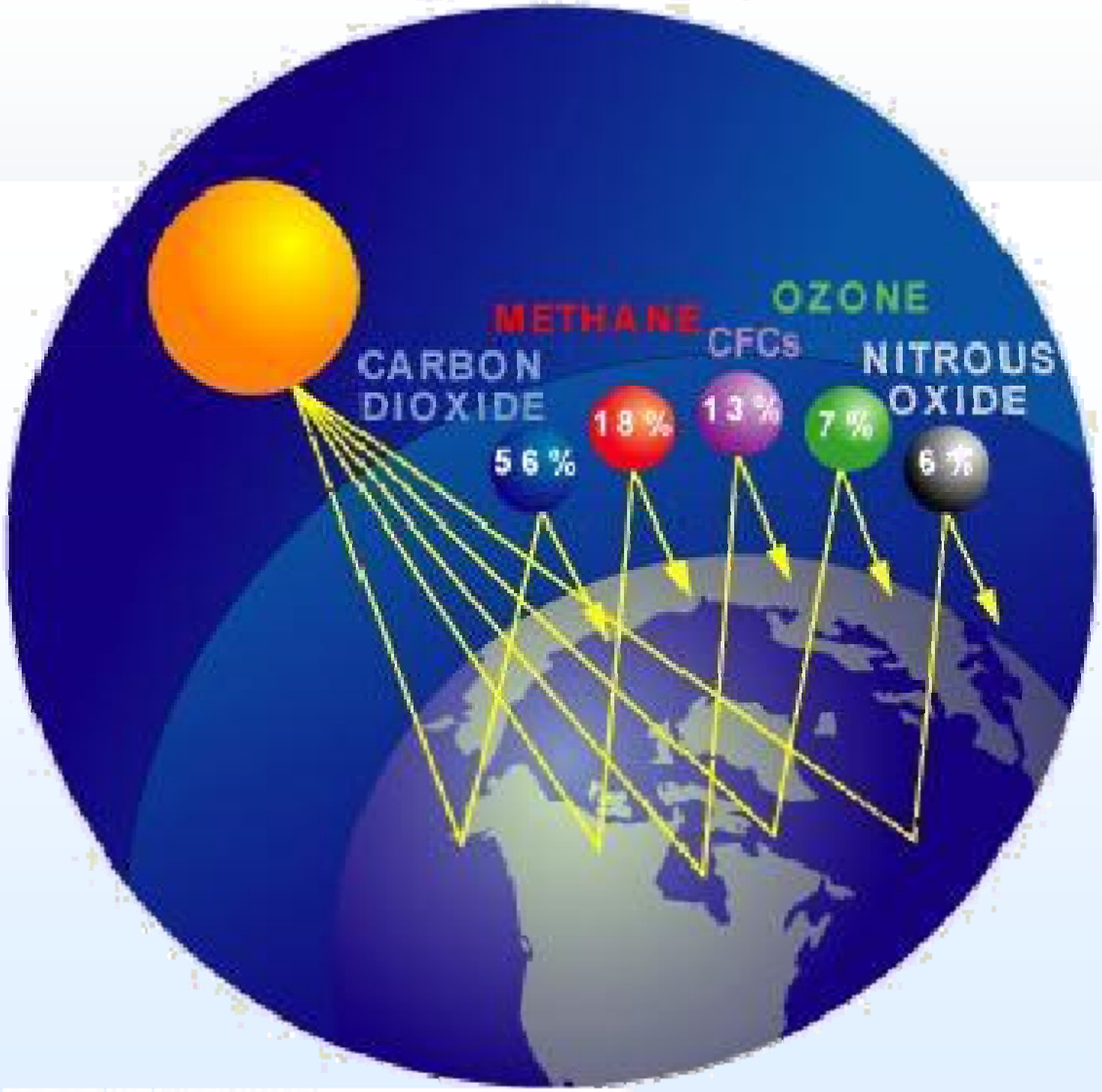
- Livestock produces 18% of all anthropogenic GHG globally
- Livestock produces more GHG than transportation
- Livestock produces even more than 18% (as stated by FAO), namely 51% of all GHG globally (Worldwatch Inst)
- Grazing systems produce less GHG than conventional animal production in confinement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

“Livestock’s Long Shadow” (FAO, 2006)

- “The Livestock sector is a major player, responsible for 18% of GHG emissions measured in CO_2e. This is a higher share than transport”



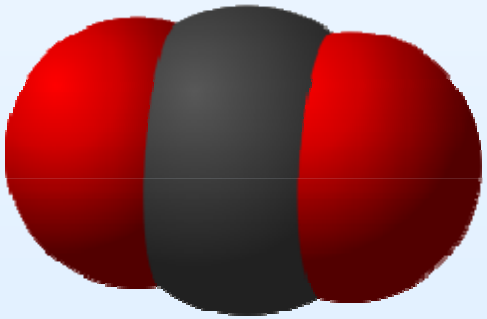



METHANE
OZONE
CFCs
CARBON DIOXIDE
NITROUS OXIDE
56%
18%
13%
7%
6%

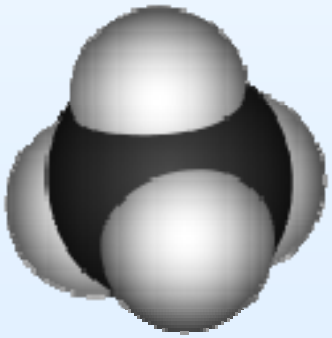
GHG & GWP

Global Warming Potential (GWP) of Main GHG

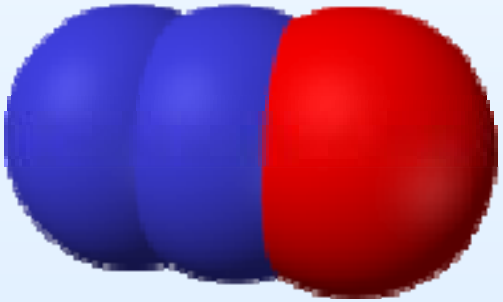
- Carbon Dioxide, CO_2 1
- Methane, CH_4 21
- Nitrous Oxide, N_2O 298



CO2 – Carbon Dioxide

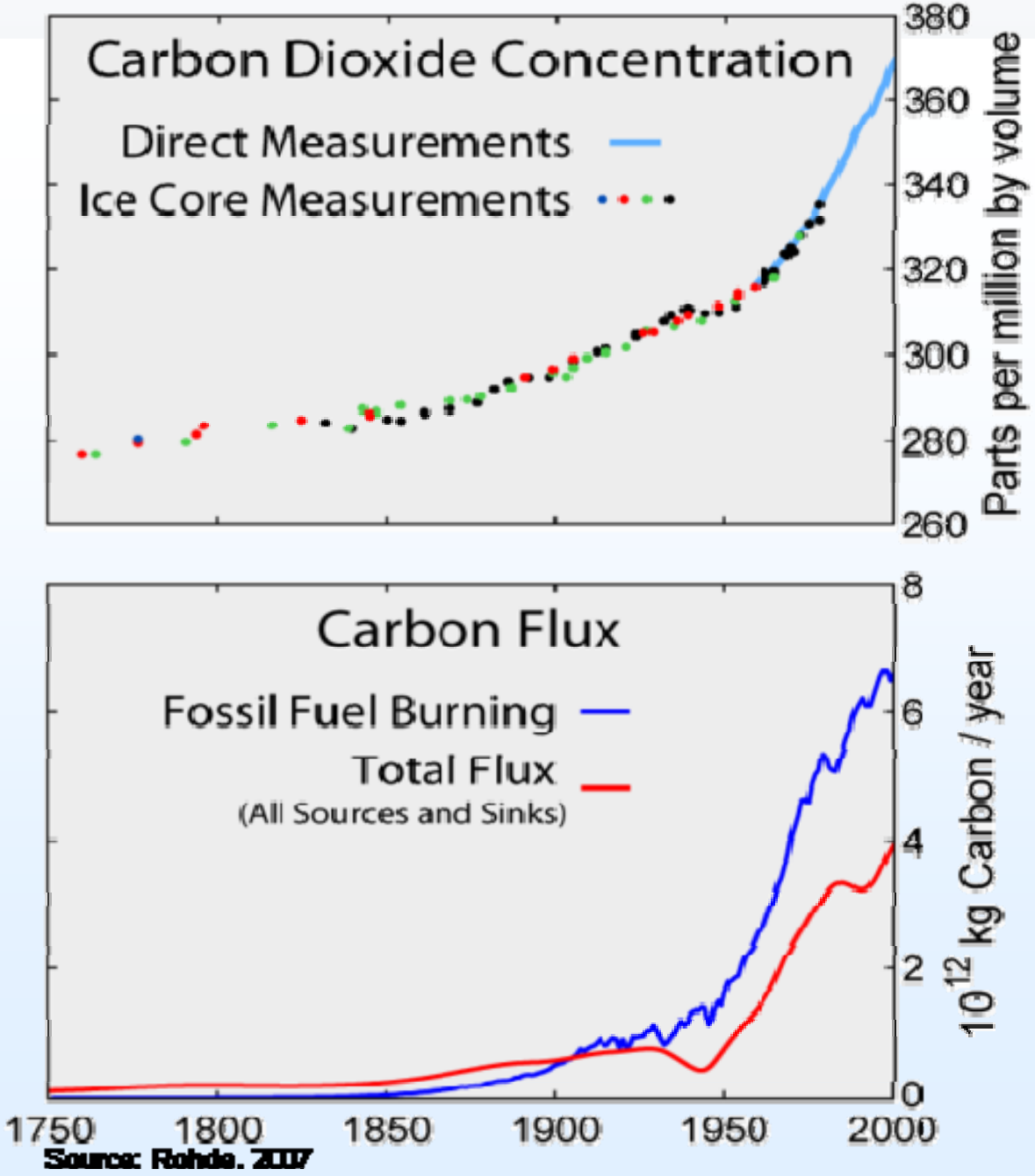


CH4 – Methane

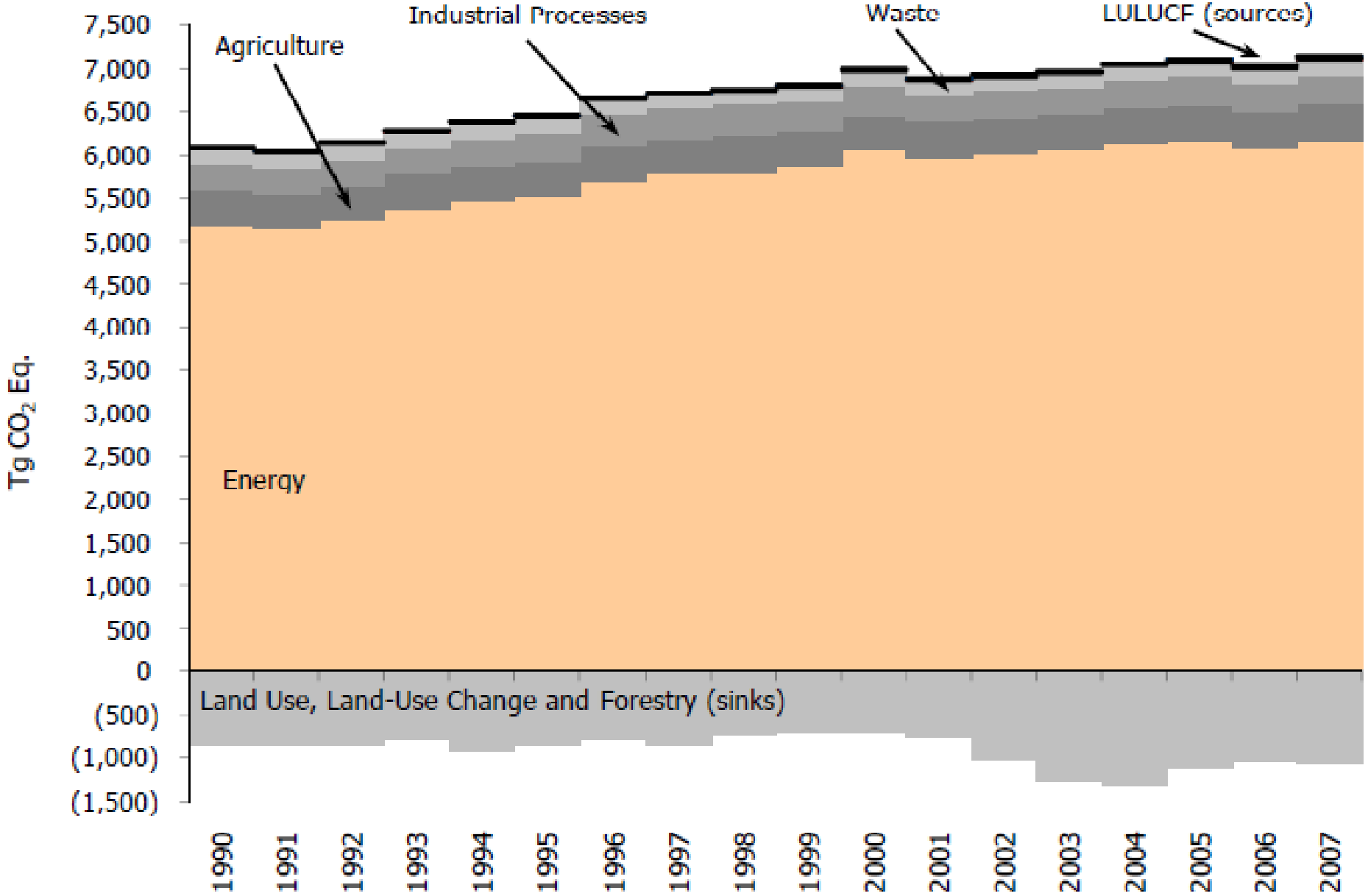


N2O – Nitrous Oxide

Carbon Dioxide and Carbon Flux

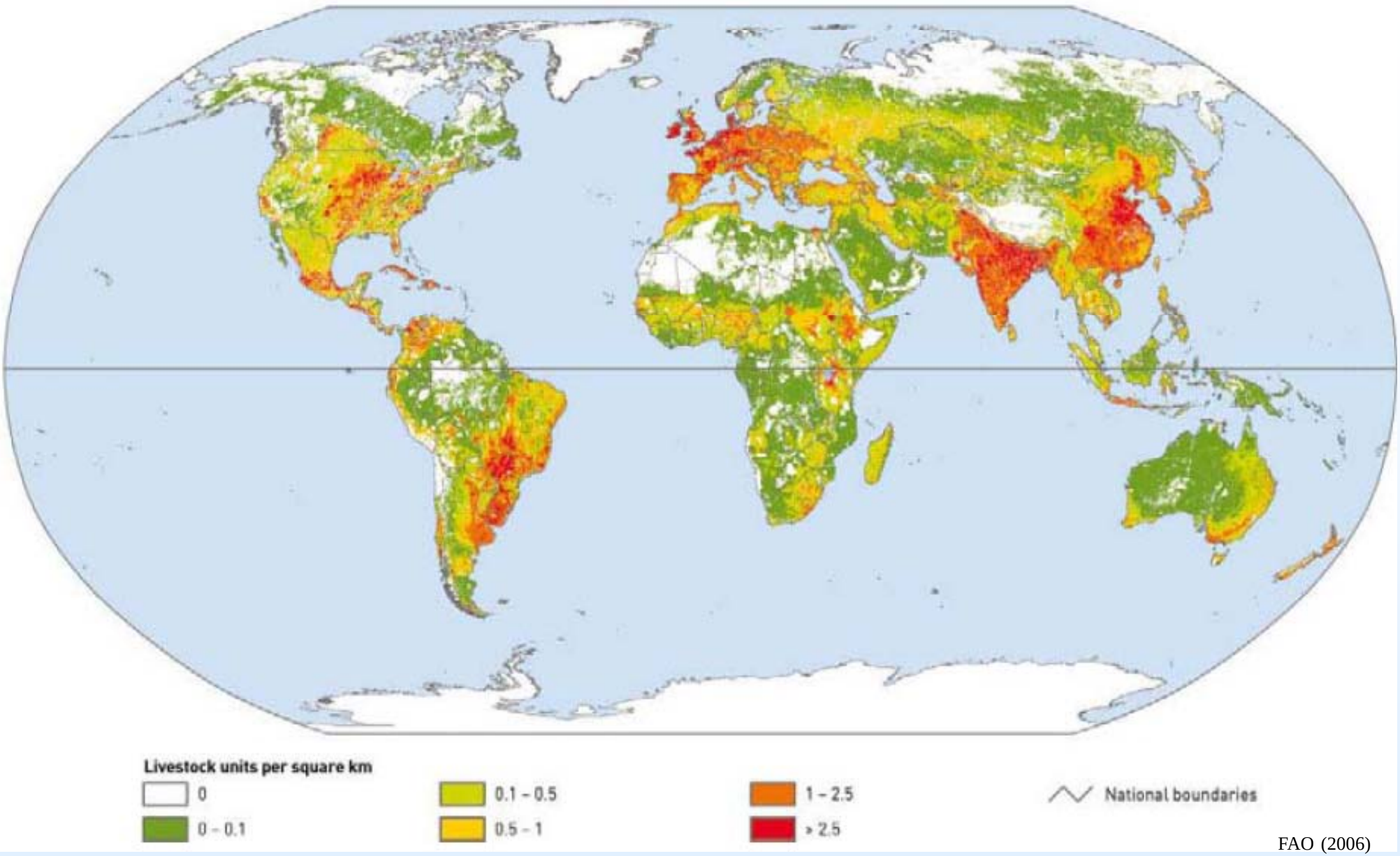


U.S. – the big GHG picture



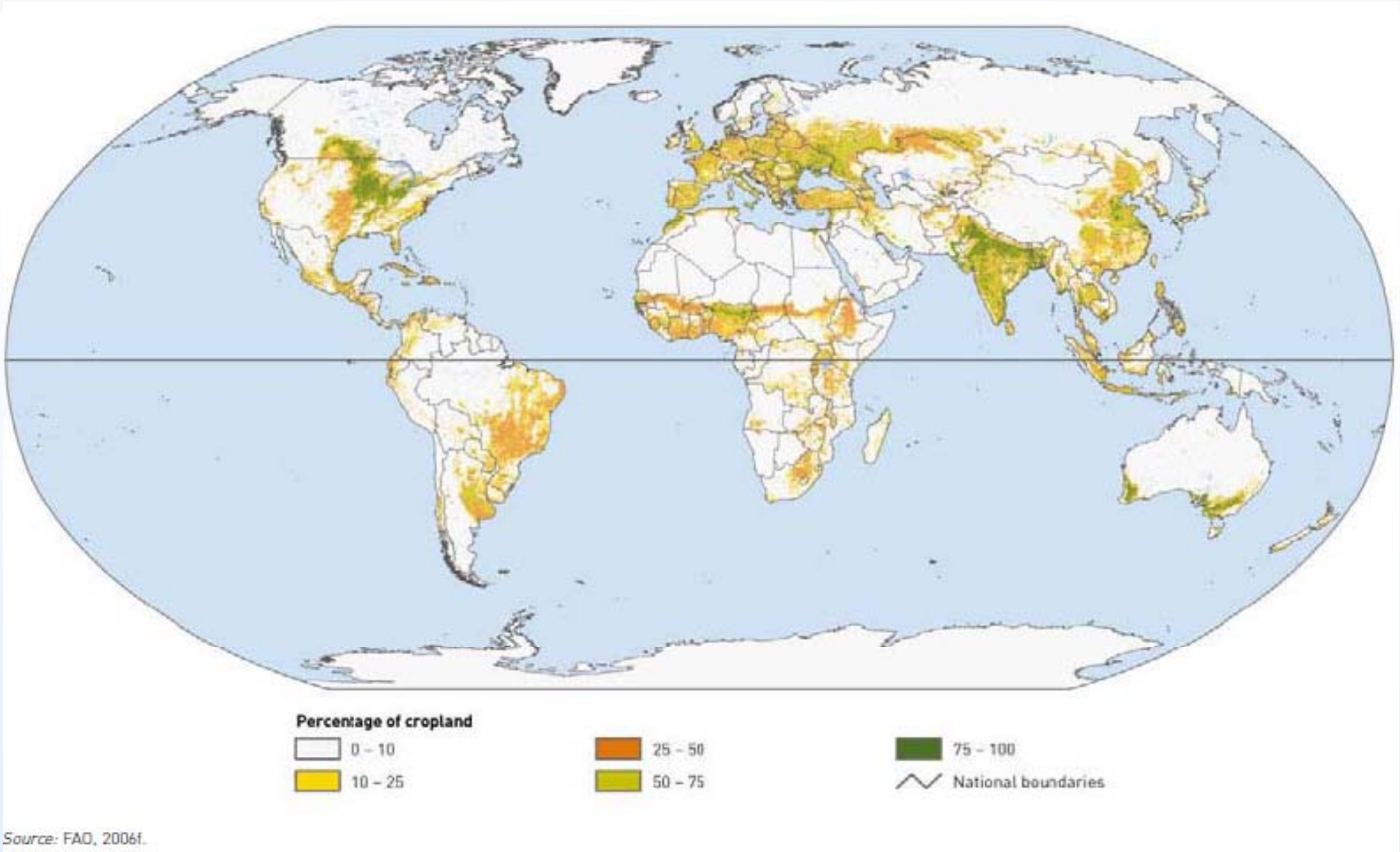
Source: EPA (2009)

Global livestock distribution



FAO (2006)

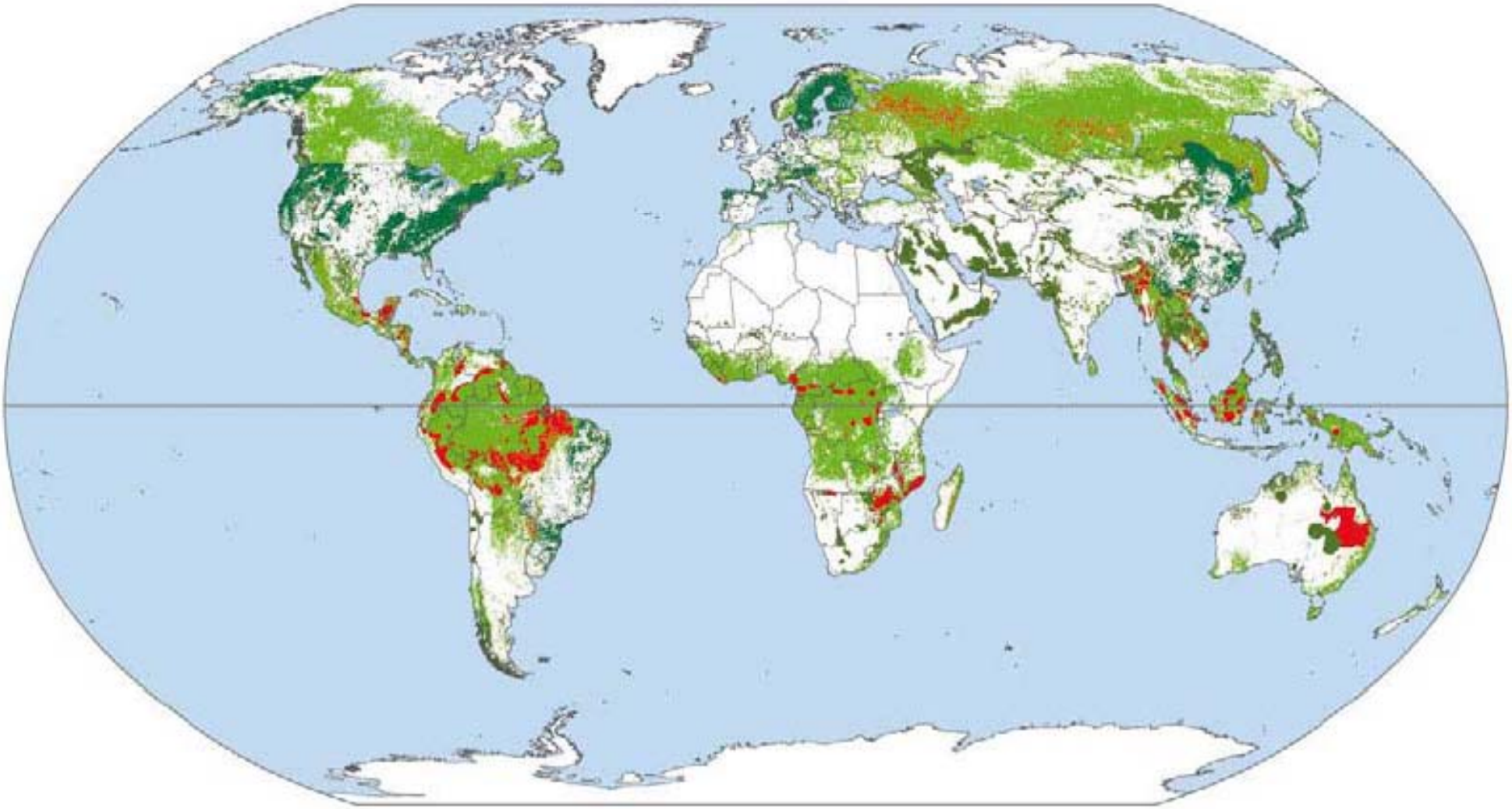
Distribution of cropland



Source: FAO, 2006f.

FAO (2006)

Forest transition and land degradation in dry lands

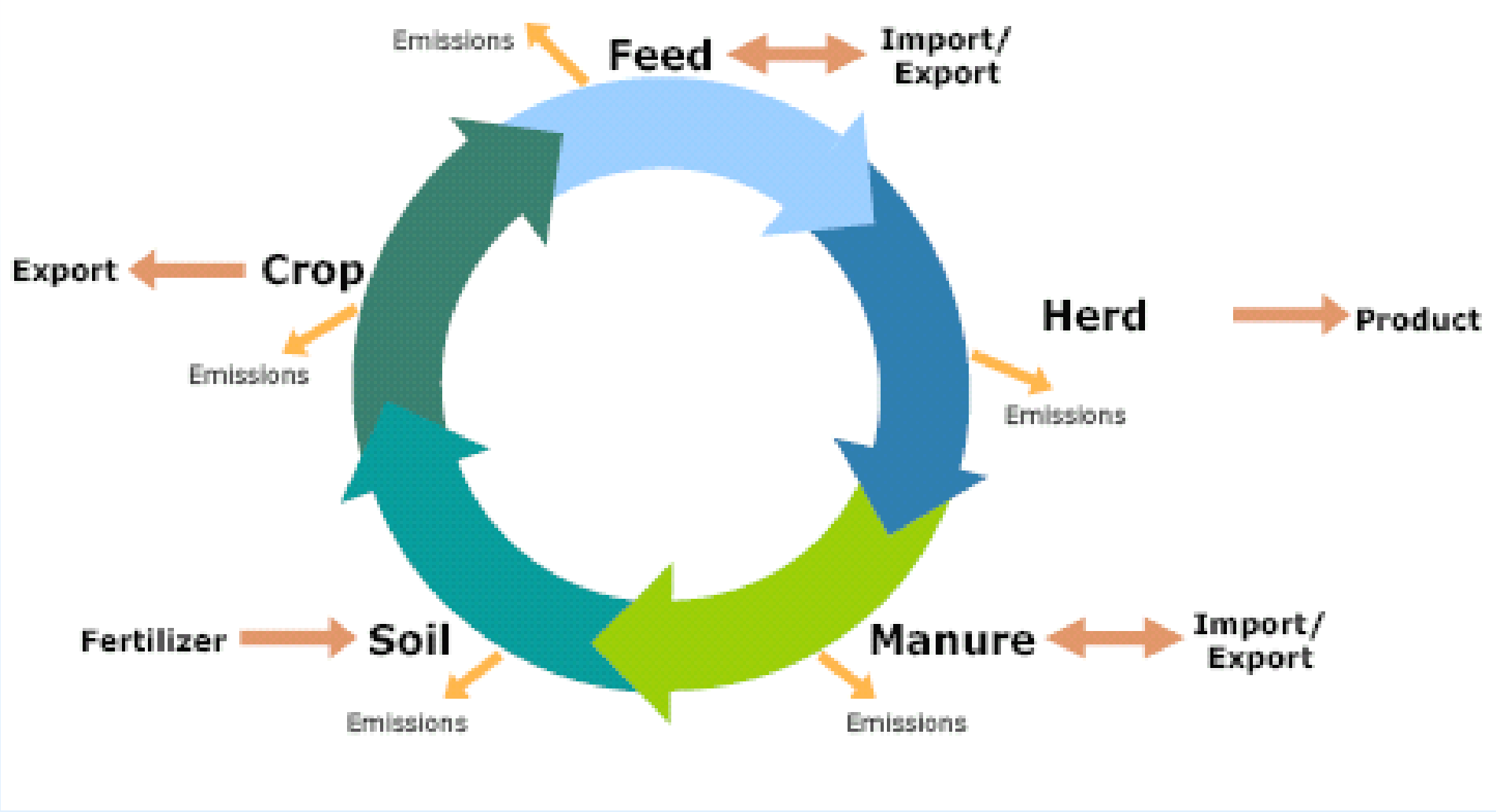


Source: FAO, 2006

FAO (2006)

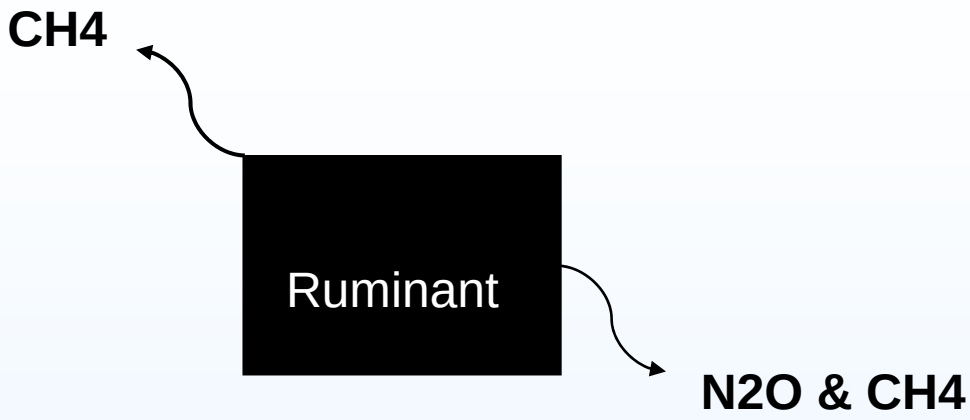
Deforestation in the amazon for livestock production accounts for ~1/3 of the total GHG due to livestock

Life Cycle Assessments



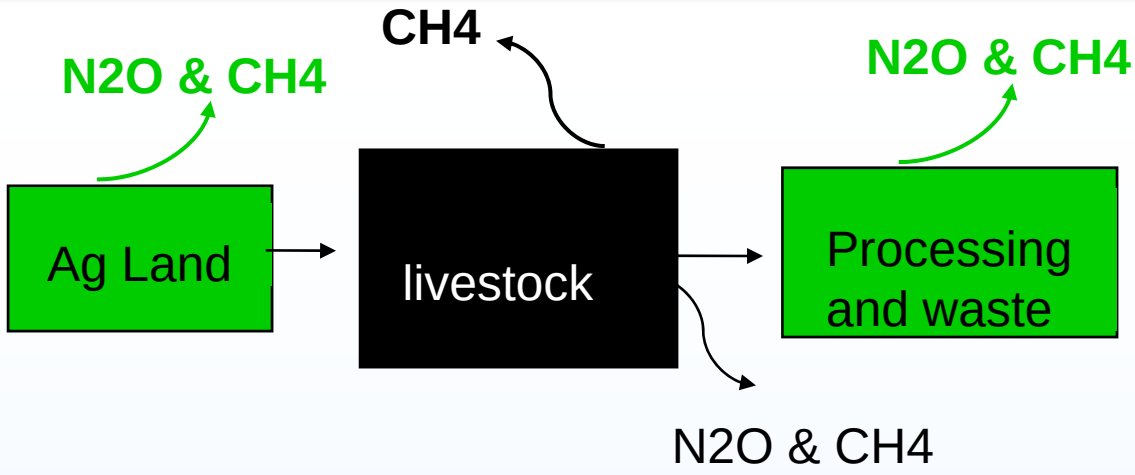
(NRC, 2003)

LCA-1: Direct Emissions



Direct emissions: eructation enteric fermentation, manure and urine excretion

LCA-2: Direct + Indirect Emissions from Livestock



Livestock Indirect emissions include:

feed crops

manure application

Direct mineral fertilizer emissions

Processing

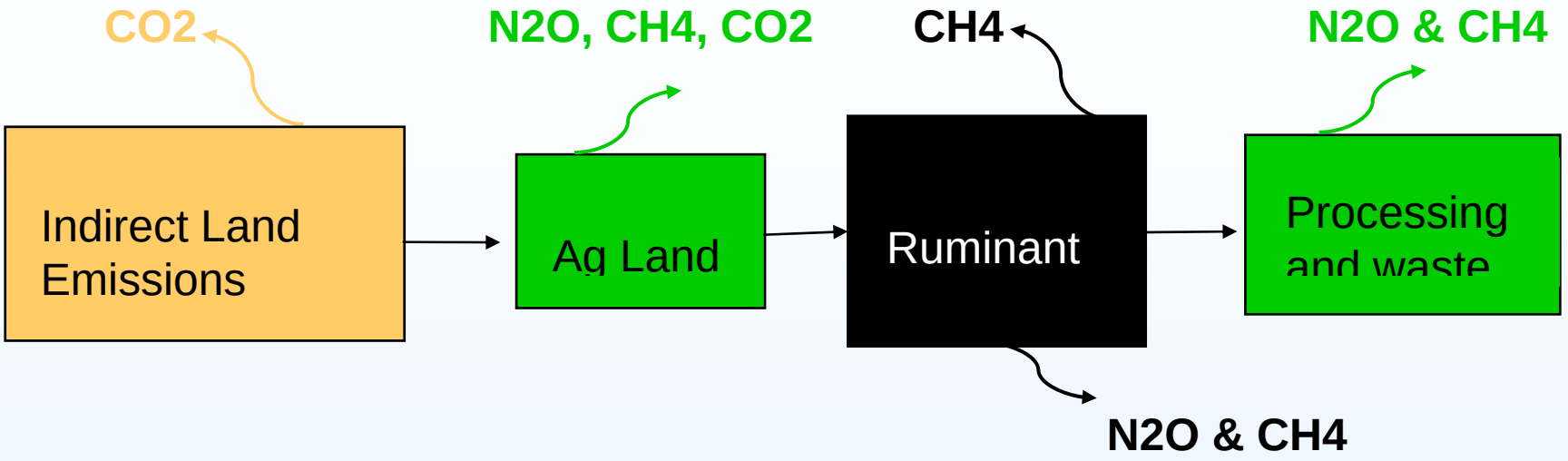
Transportation

Deforestation

Desertification

LCA-3: "True" LCA

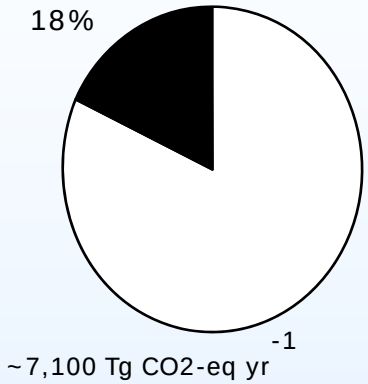
LCA-3 (direct + indirect emissions from livestock + crop-based indirect emissions)

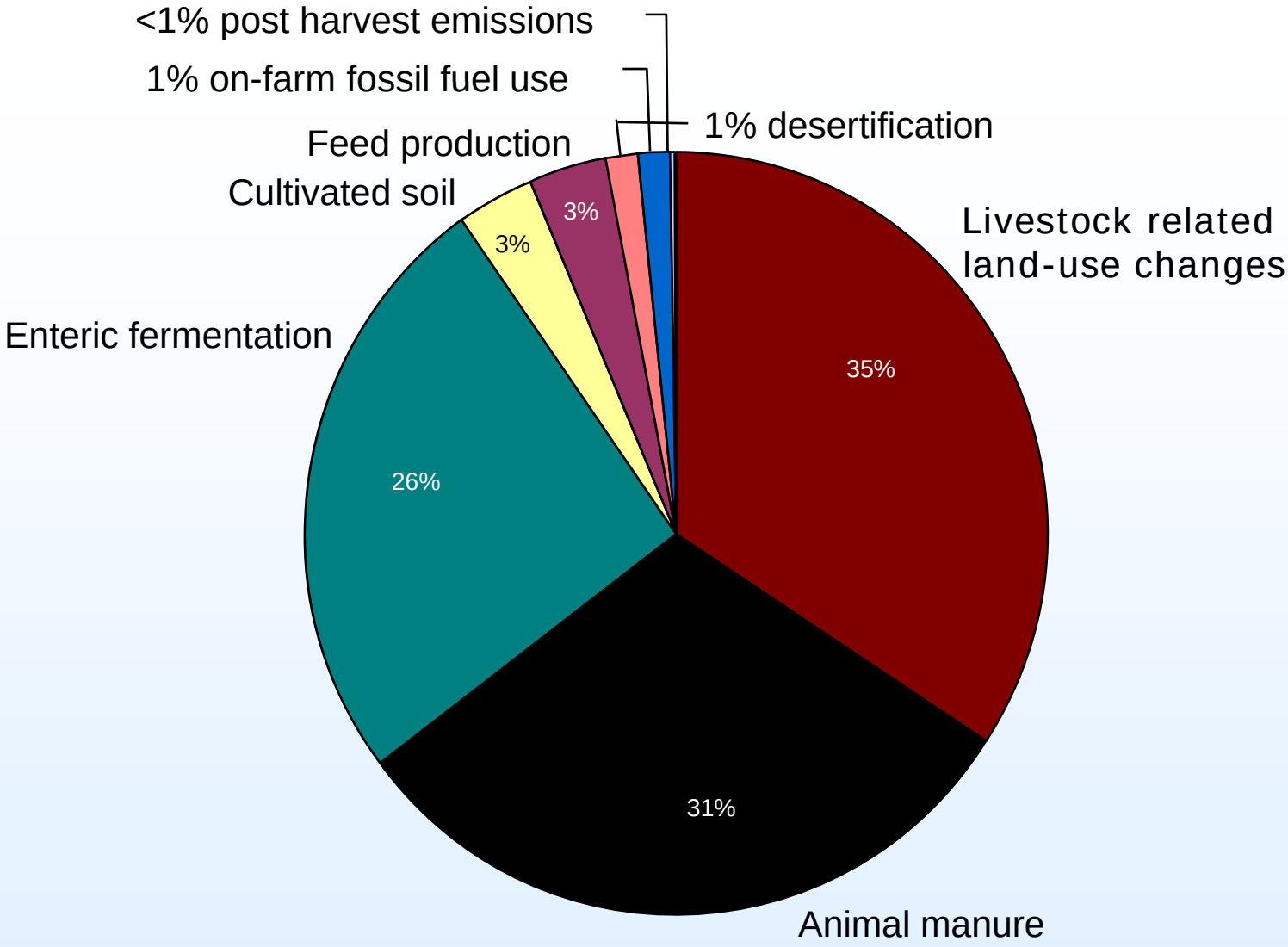


Crop-based Indirect Emissions include:

- Fertilizer production
- Herbicide production
- Pesticide production
- Energy associated with irrigation


livestock's long shadow
environmental issues and options


18%
-1
~7,100 Tg CO2-eq yr

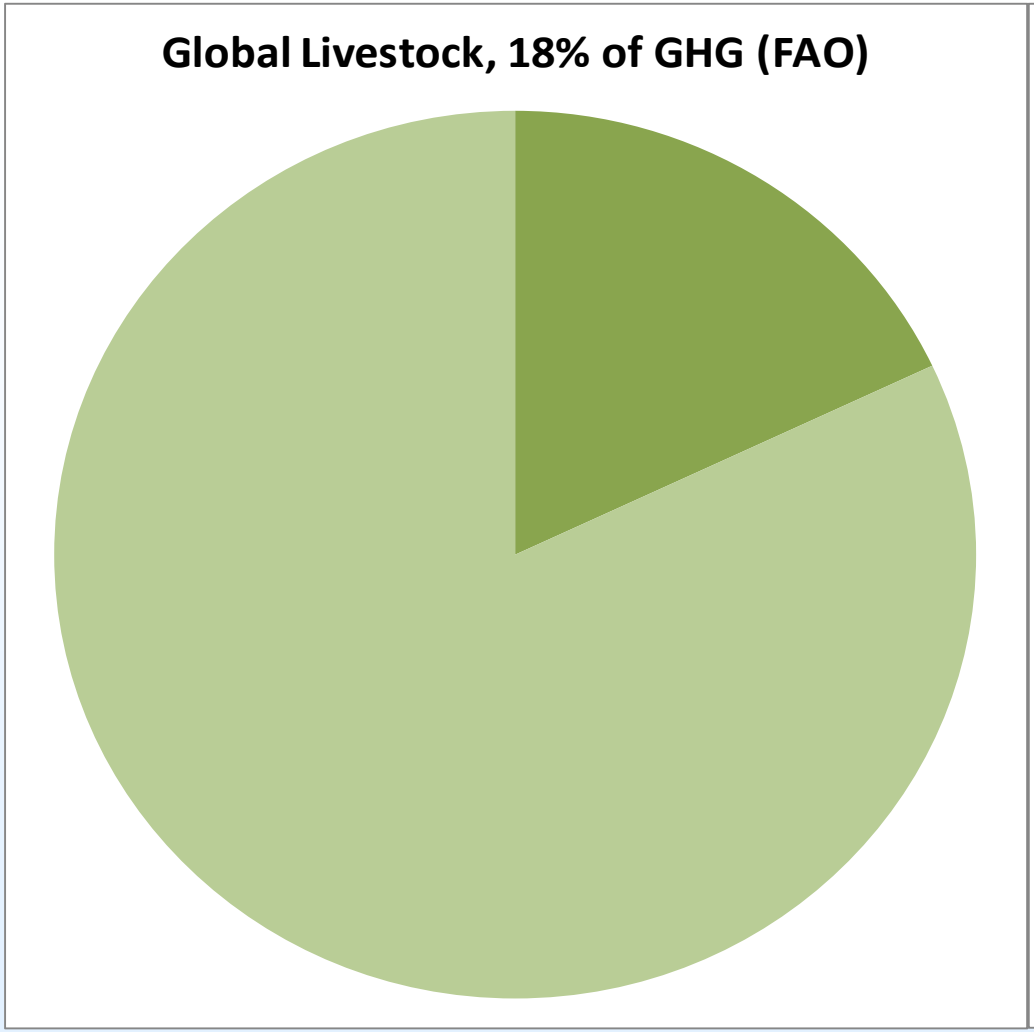

<1% post harvest emissions
1% on-farm fossil fuel use
1% desertification
Feed production
Cultivated soil
Livestock related land-use changes
Enteric fermentation
Animal manure
3%
3%
35%
26%
31%

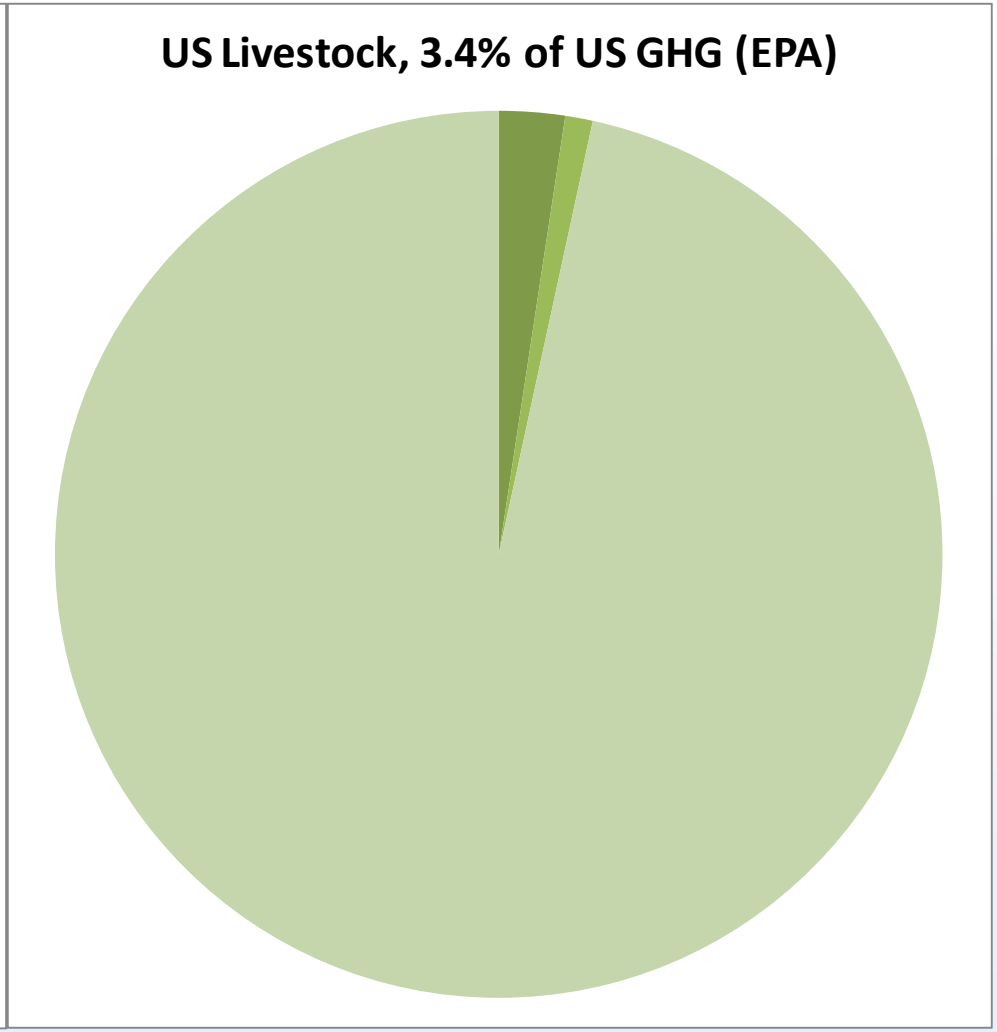
Clearing the Air: Livestock's Contributions to Climate Change

Maurice Pitesky, Kim Stackhouse, and Frank Mitloehner

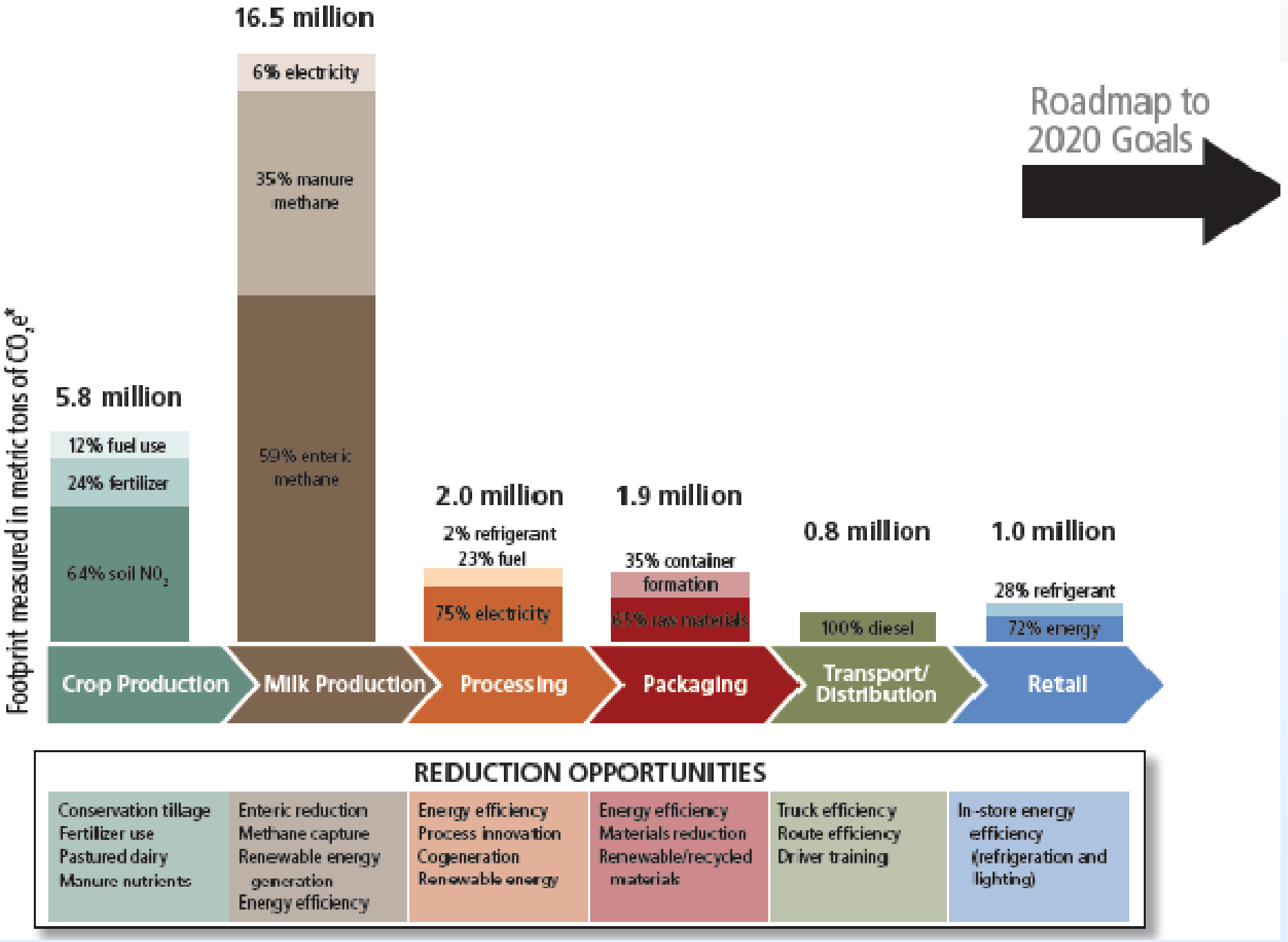
Advances in Agronomy, Vol 103

Global vs US Livestock GHG





TOTAL = 28.0 million metric tons CO_2e



Discussion

- Livestock in developed countries has relatively small GHG contribution dwarfed by large transportation, energy, and industry
- In developing countries livestock can be a dominant contributor to the GHG portfolio due to deforestation and to their relatively smaller transportation and energy sectors

Discussion

- According to *Livestock's Long Shadow*, intensification provides "large opportunities for climate change mitigation, can reduce greenhouse gas emissions from deforestation," and is the long-term solution to more sustainable livestock production
- In the United States, transportation accounts for at least 26% of total anthropogenic GHG emissions, electricity for 31%, compared to roughly 3.4% associated with livestock production

Conclusions

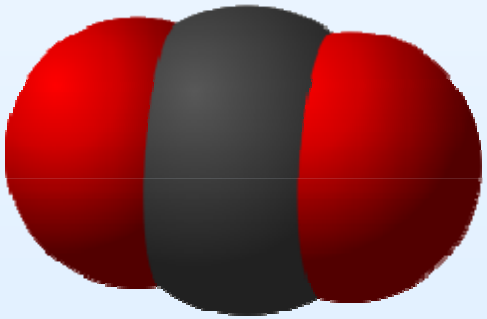
- “Livestock’s Long Shadow” 18% is an international number, not representative of US livestock.
- This number includes land use issues in developing countries (e.g., deforestation), which inflates the number by as much as one third.
- Comparison livestock vs transportation is inappropriate (LCA 3 vs LCA 1)
- Livestock production in developed countried are a model for the rest of the world due to efficiencies
- Largest livestock issues: digestibility (developing countries) and waste management (developed countries)

GHG & GWP (according to Worldwatch Inst.)

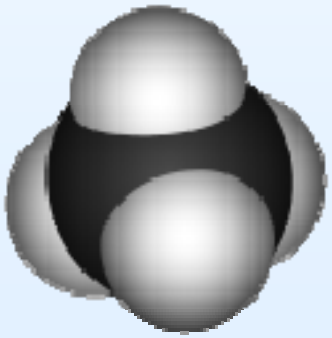
Global Warming Potential (GWP) of Main GHG

- Carbon Dioxide, CO_2 1
- Methane, CH_4 23
- Nitrous Oxide, N_2O 298

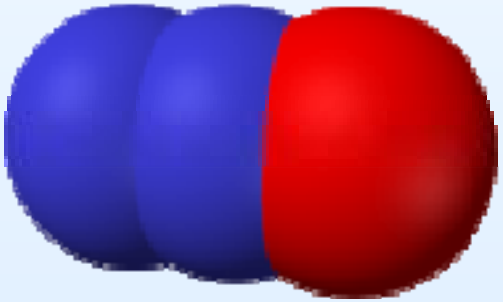
72



CO2 – Carbon Dioxide



CH4 – Methane



N2O – Nitrous Oxide

Media Response

BBC Home | News | Sport | Weather | TV | Radio

Page last updated at 00:15 GMT, Wednesday, 24 March 2010

UN body to look at meat and climate link

By Richard Black
Environment correspondent, BBC News

Livestock's Long Shadow calculated meat-related emissions from field to abattoir

UN specialists are to look again at the contribution of meat production to climate change, after claims that an earlier report exaggerated the link.

"I must say honestly that he has a point - we factored in everything for meat emissions, and we didn't do the same thing with transport, we just used the figure from the IPCC."

BBC **Dr. Pierre Gerber, LLS contributing author**

MACLEANS.CA

Save the planet: Stop eating meat

The UN says so, and so do a growing list of school boards. Meet the new eco enemy.

by Katie Engelhart and Nicholas Köhler on Tuesday, March 30, 2010 9:00am - 83 Comments

Photograph by Mike Kemp/Getty Images

MACLEANS.CA

Where's the beef?

By Nicholas Köhler - Tuesday, March 30, 2010 - 9 Comments

Scientist takes a second look at UN numbers that have led many environmentalists to forego meat

For those advocating for urgent action on the climate change file, it's been a rough few months.

From the "Climategate" email scandal at the University of East Anglia to the Intergovernmental Panel on Climate Change report's now-debunked claim that Himalayan glaciers could melt by 2035, advocates have been hit by a series of damaging credibility gaps.

Now the latest: the notion, trumpeted by environmentalists and animal rights crusaders in Europe and in North America, that reducing our consumption of meat will help keep the planet cool.

ECOLOGIST

SETTING THE ENVIRONMENTAL AGENDA SINCE 1970

40 YEARS

and choose

Have we got it right on meat and greenhouse gas emissions?

Tom Levitt

8th April 2010

Analysis showing lower greenhouse gas emissions associated with intensive livestock production could pose a challenge to our views on best farming practice

When it comes to livestock, meat production and climate change the dominating argument amongst environmentalists has been that intensive, factory-style farming is bad for animal welfare and has a bigger negative

If intensive farming has the lowest environmental impact should we promote it?

TIME
IN PARTNERSHIP WITH CNN Health & Science

Meat-Eating Vs. Driving: Another Climate Change Error?

By LISA ABEND Saturday, Mar. 27, 2010

Carla Gottgens / Bloomberg / Getty Images

COLUMBIA
JOURNALISM
REVIEW
Strong Press, Strong Democracy

The Observatory — March 29, 2010 03:44 PM

Meat vs. Miles

Coverage of livestock, transportation emissions hypes controversy

By Curtis Brainard

For the last four years, media outlets such as *The New York Times*, the *Los Angeles Times*, and Fox News have repeatedly cited a United Nations study which found that livestock production is responsible for about 18 percent of global greenhouse-gas emissions—a larger share than comes from all planes, trains, and automobiles combined.

Last week, news outlets revisited those claims, following a talk delivered by Dr. Frank Mitloehner, an animal scientist based at UC Davis, at an American Chemical Society meeting last Monday. Mitloehner criticized the conclusions of a 2006 report from the U.N. Food and Agriculture Organization, "Livestock's Long Shadow." The study's assertion that meat (including eggs, dairy, and other animal protein) production is responsible for more greenhouse-gas emissions globally than the transportation industry is certainly untenable, and likely false, he said.

CNN

Scientist: Don't blame cows for climate change

By Paul Armstrong, CNN
March 26, 2010 12:31 p.m. EDT

Telegraph.co.uk

HOME » EARTH » ENVIRONMENT » CLIMATE CHANGE

UN admits flaw in report on meat and climate change

The UN has admitted a report linking livestock to global warming exaggerated the impact of eating meat on climate change.

By Alastair Jamieson
Published: 7:16AM GMT 24 Mar 2010

Dr Frank Mitloehner said the UN comparison between meat farming and transport emissions was 'lopsided' Photo: STEPHEN LOCK

smh.com.au
The Sydney Morning Herald

Eating less meat 'won't help climate'

March 23, 2010

AFP

Eating less meat will not reduce global warming and reports that claim it will are distracting society from finding real ways to beat climate change, says a leading air quality expert.

"We certainly can reduce our greenhouse gas production, but not by consuming less meat and milk," Frank Mitloehner said on Monday as he presented a report on meat-eating and climate change at a conference of the American Chemical Society in California.

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Livestock emissions threat overstated

Asa Wahlquist | The Australian | April 08, 2010 12:00AM

THE author of a UN Food and Agriculture Organisation report that has been used to argue that eating less meat would save the planet has admitted the study overstated the impact of greenhouse gas emissions from livestock.

环保公益网

少吃肉无助于缓和全球暖化

时间：2010-03-23 23:16 来源：雅虎奇摩 作者：法新社 点击：28次

真正等于少排放的是以比较聪明的方式畜养动物，而不是减少畜养。减少肉类和乳类产量只会使贫穷国家的饥饿问题恶化。

重要的空气品质专家米特洛纳（Frank Mitloehner）今天说，少吃肉无助于缓和全球暖化，并指这只会分散大家对寻找真正解决之道的注意力。

米特洛纳是加州大学戴维斯校区（University ofCalifornia--Davis）的空气品质专家，他在「美国化学学会」（American Chemical Society）于加州举行的会议中，提出报告说明食肉与气候变迁问题。他说："我们当然可以减少我们的温室废气制造量，但其方法不是减少肉类和乳类的食用量。"

他表示，将气候变迁归咎于牛和猪，欠缺科学精确性。他驳斥了若干报告的说法，包括 联合国2006年所提出的报告，指其夸大了牲畜对全球暖化所发挥的作用。

專家：少吃肉無助於緩和全球暖化

AFP 更新日期：2010/03/23 06:50 張佑之

（法新社華盛頓22日電）重要的空氣品質專家米特洛納（Frank Mitloehner）今天說，少吃肉無助於緩和全球暖化，並指這只會分散大家對尋找真正解決之道的注意力。

THE TIMES OF INDIA | Diet

Eating less meat won't reduce global warming

AFP, Mar 23, 2010, 01.09pm IST

Eating less meat won't reduce global warming (Getty Images)

Eating less meat will not reduce global warming, and reports that claim it will are distracting society from finding real ways to beat climate change, a leading air quality expert said.

"We certainly can reduce our greenhouse gas production, but not by consuming less meat and milk," Frank Mitloehner, an air quality expert at the University of California-Davis, said as he presented a report on meat-eating and climate change at a conference of the American Chemical Society in California.

YAHOO! INDIA NEWS BETA ANI

Consumption of meat, dairy products not linked to global warming

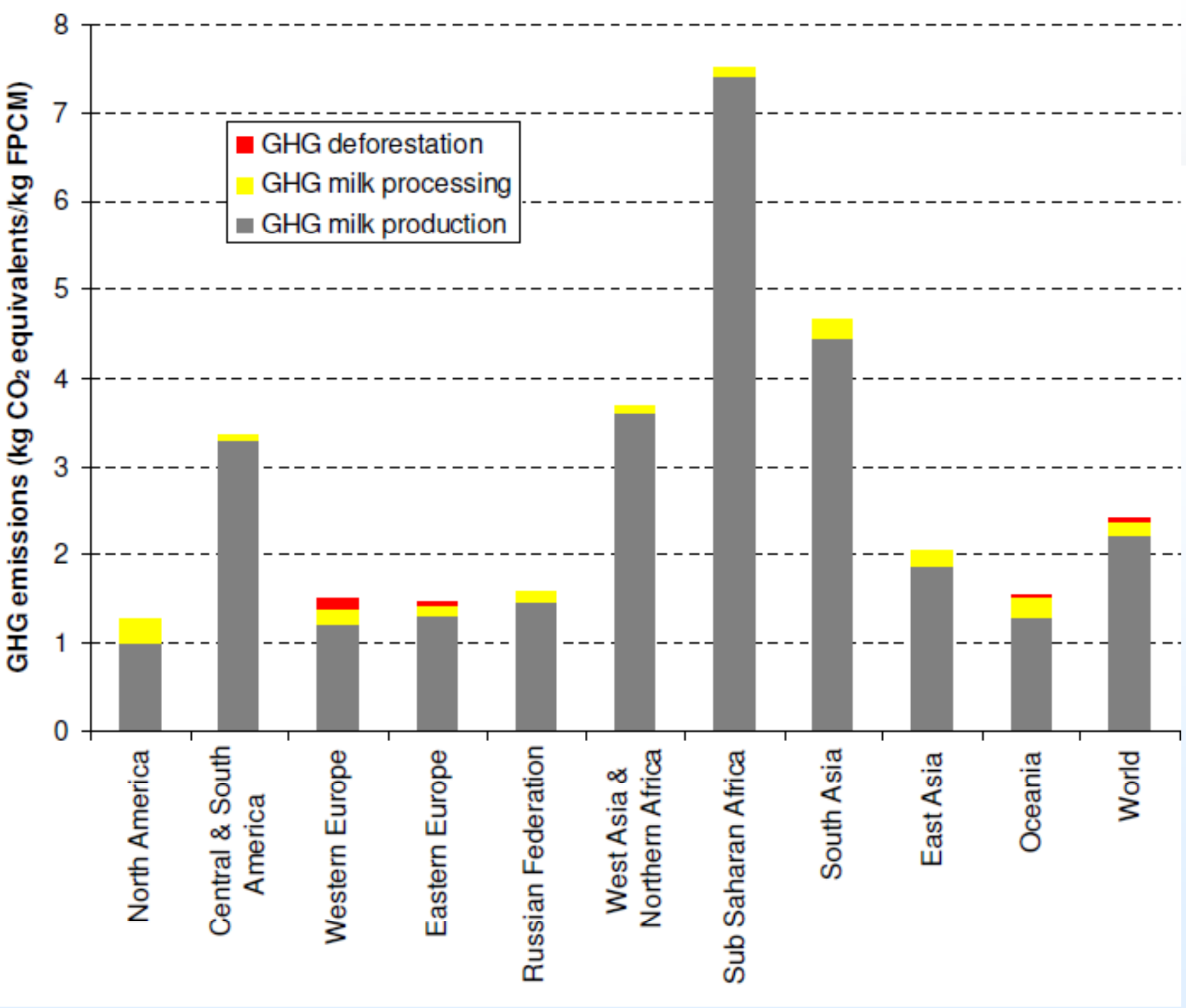
Tue, Mar 23 11:55 AM

Washington, March 23 (ANI): Cutting down on consumption of meat and dairy products will not reduce global warming, says a new research.

Until now, experts had linked diets rich in animal products to production of greenhouse gases.

Air quality expert Frank Mitloehner insists that the notion is fruitless to curbing global warming.

UN FAO Follow-up work


GHG emissions (kg CO_2 equivalents/kg FPCM)
0
1
2
3
4
5
6
7
8
GHG deforestation
GHG milk processing
GHG milk production
North America
Central & South America
Western Europe
Eastern Europe
Russian Federation
West Asia & Northern Africa
Sub Saharan Africa
South Asia
East Asia
Oceania
World

FAO (2010)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LET THERE BE LIGHT
1868