

Greenhouse gas emissions from the global cattle sector



**SUSTAINABILITY IN LIVESTOCK
PRODUCTION**

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**CAMPO GRANDE, 9 JUNE 2011
BRAZIL**

Outline



- The Context and challenge
- Approach to assessing GHG emissions from livestock food chains
- Cattle sector's contribution to GHG emissions
- What are the options?
- FAO's initiatives towards addressing sustainability of LFC
- Conclusions

Context and challenge



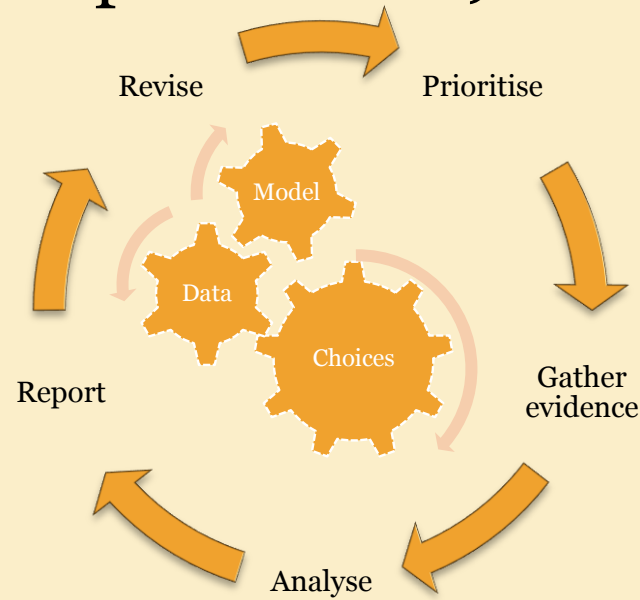
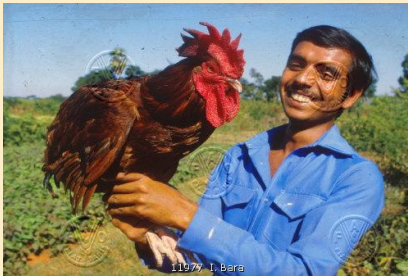
- Livestock: growing and dynamic sector, particularly in developing countries – *nutrition, poverty alleviation, economic growth*

- Future demand will be constrained by a number of factors
 - ┆ *climate change and variability*
 - ┆ *high input prices*
 - ┆ *increasing resource scarcity*
 - ┆ *increasing environmental concerns*
 - ┆ *Social and ethical concerns e.g. animal welfare*

- Livestock sector at the center of key environmental issues: *climate change, water, land, nutrients – increasing pressure to adapt and improve its performance*

The context and challenge (2)

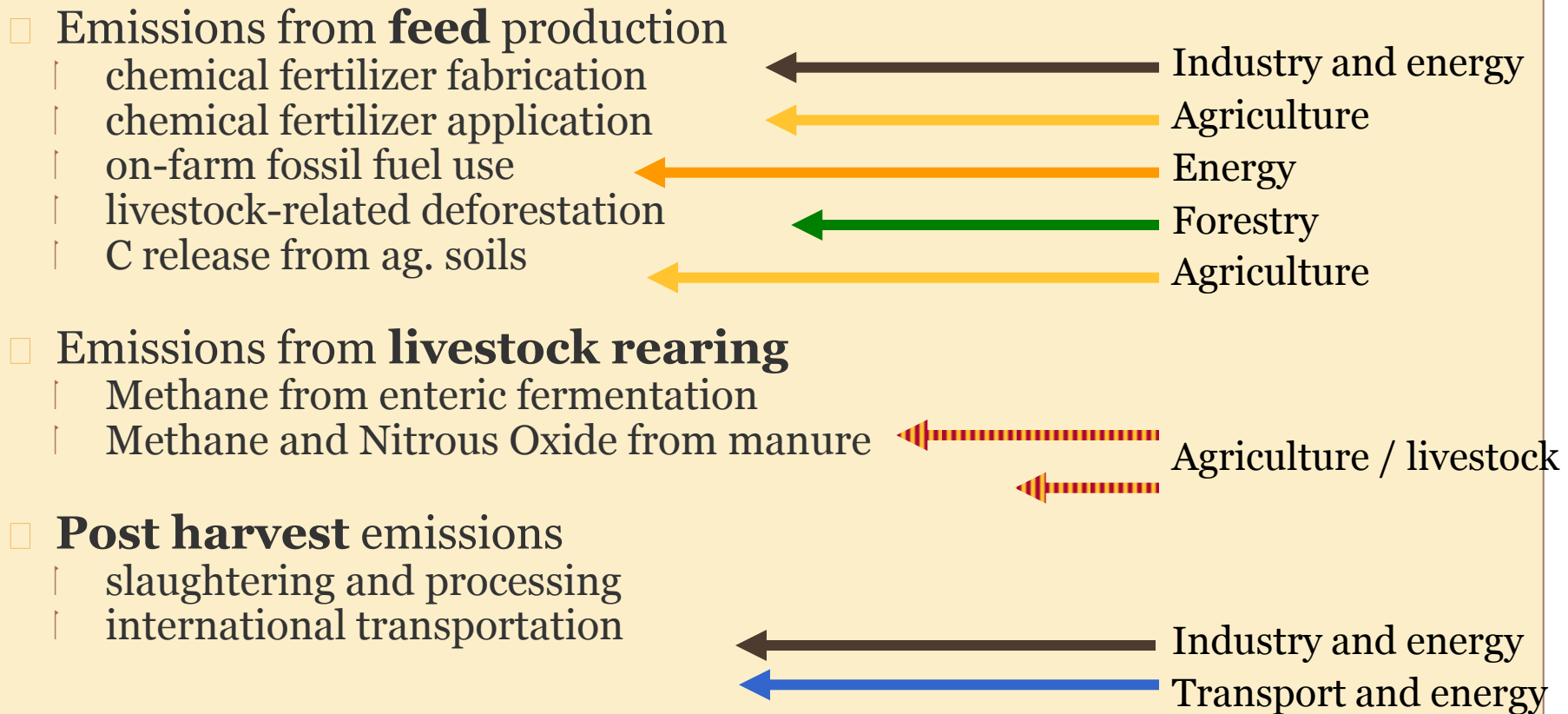
- Agricultural production – complex, essential to wellbeing.
- Models – simplifications of the real world (robust, manageable, comprehensible).



A food-chain perspective of GHG emissions



IPCC attribution



Methodology: life cycle assessment approach



- **What is LCA?** Impact of a product/service over its entire life cycle, includes upstream and downstream effects, e.g. fertiliser manufacture and post-farm gate processing

- **Why use LCA?**
 - | Provides a more complete picture
 - | Helps identify mitigation potential and technology choices
 - | Helps avoid perverse policy outcomes (e.g. displacement of emissions from feed production)

Methodology: life cycle assessment approach (2)



□ Global GHG emissions for: six major livestock sectors

┆ Dairy	Beef	Pigs
┆ Poultry	Small ruminants	Buffalo

- Focus is on food rather than fibre or other co-products
- Predominant production systems (e.g. grass-based, mixed crop-livestock)
- Main world regions and agro-ecological zones.
- Major activity steps along the supply chains.
- Emphasis is on quantifying emissions under current production and market conditions.
- System boundary: cradle – farm gate – retail point, doesn't include:
 - ┆ land use under constant management practices;
 - ┆ production of cleaning agents, antibiotics and pharmaceuticals;
 - ┆ post-retail emissions arising from transport, cooking, waste disposal etc.

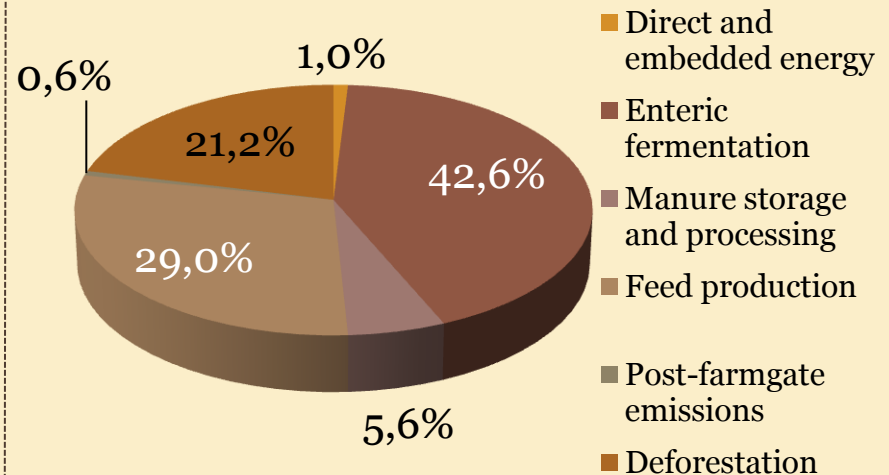


**PRELIMINARY FINDINGS
A FOCUS ON THE CATTLE
SECTOR**

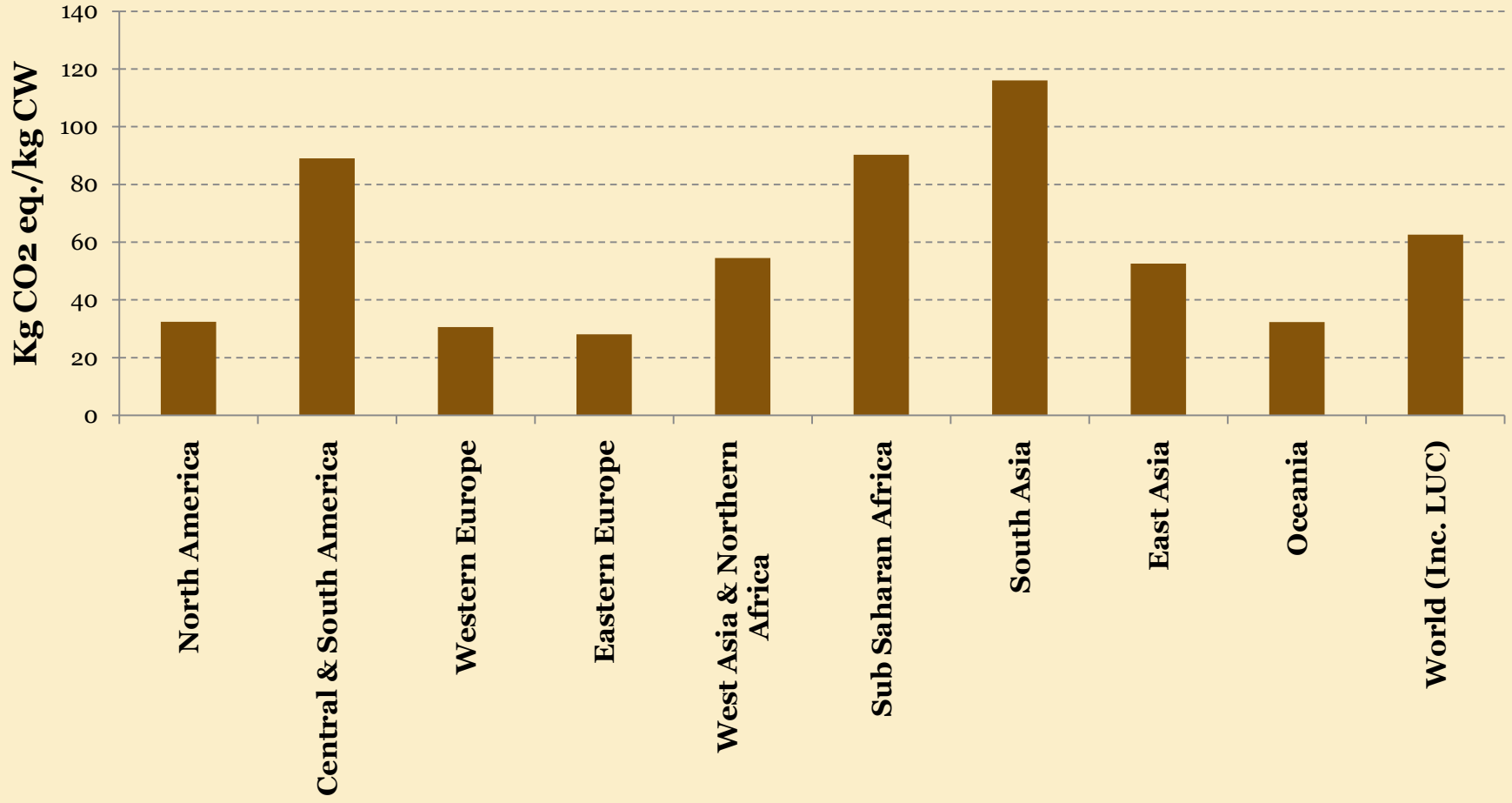
Beef – global overview

- **Non-dairy beef** ~4.4% of total anthropogenic emissions
- **Dairy beef** ~1.3% of total anthropogenic emissions
- **Overall emissions intensities** (kg CO₂e/kg CW):
 - ┆ Specialized beef - 63
 - ┆ Dairy beef - 19
- **Drivers:**
 - ┆ Feed digestibility
 - ┆ Growth and fertility rates
 - ┆ Land use change

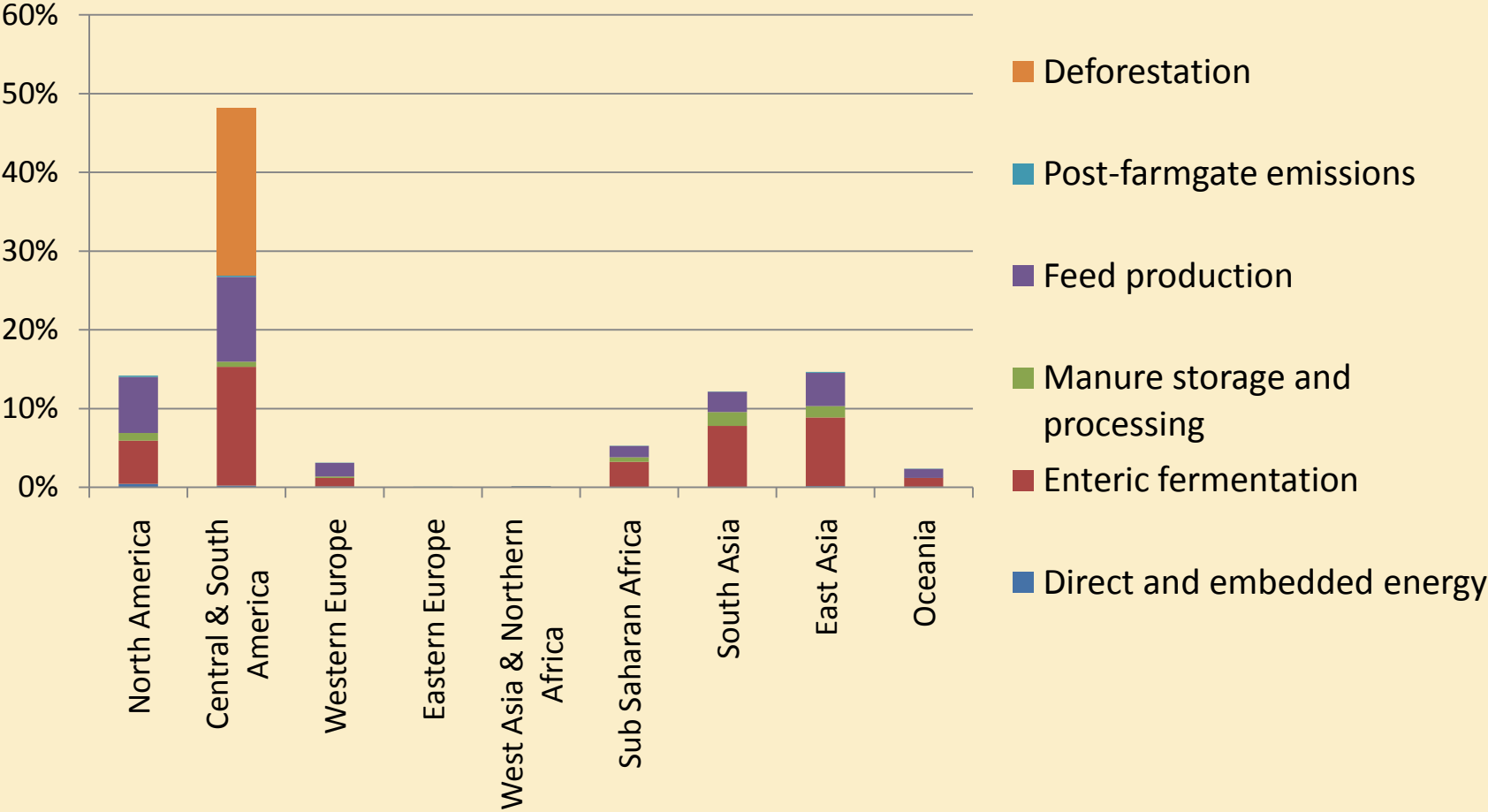
Contribution by source



Beef – Emission intensity by region



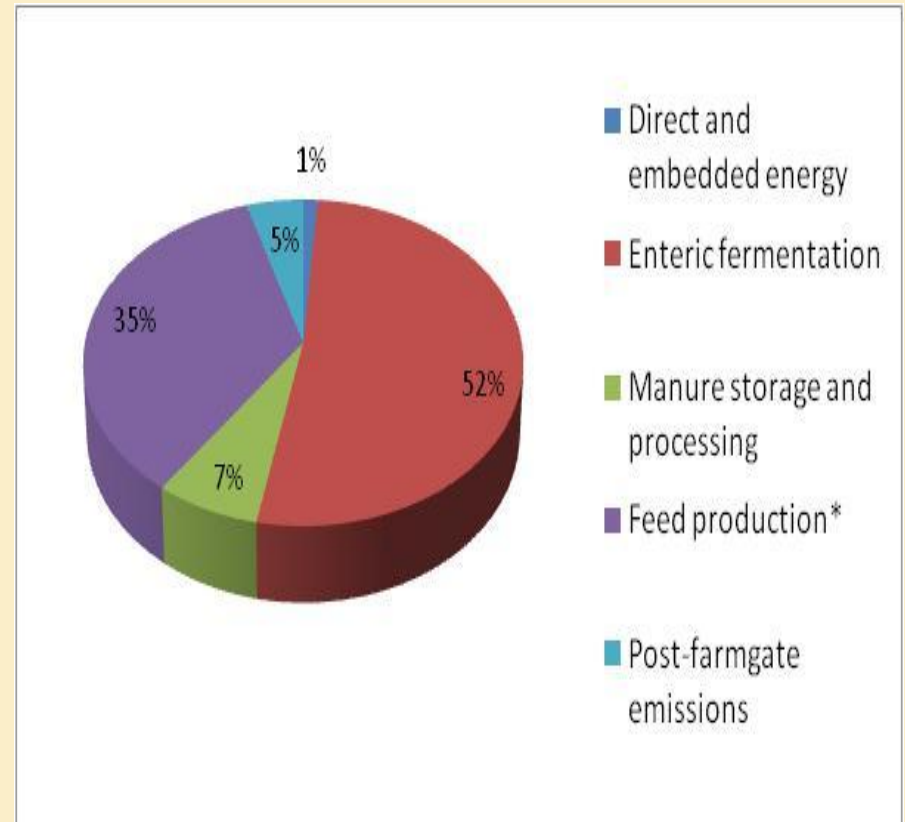
Beef- Regional share of total GHG emissions by source



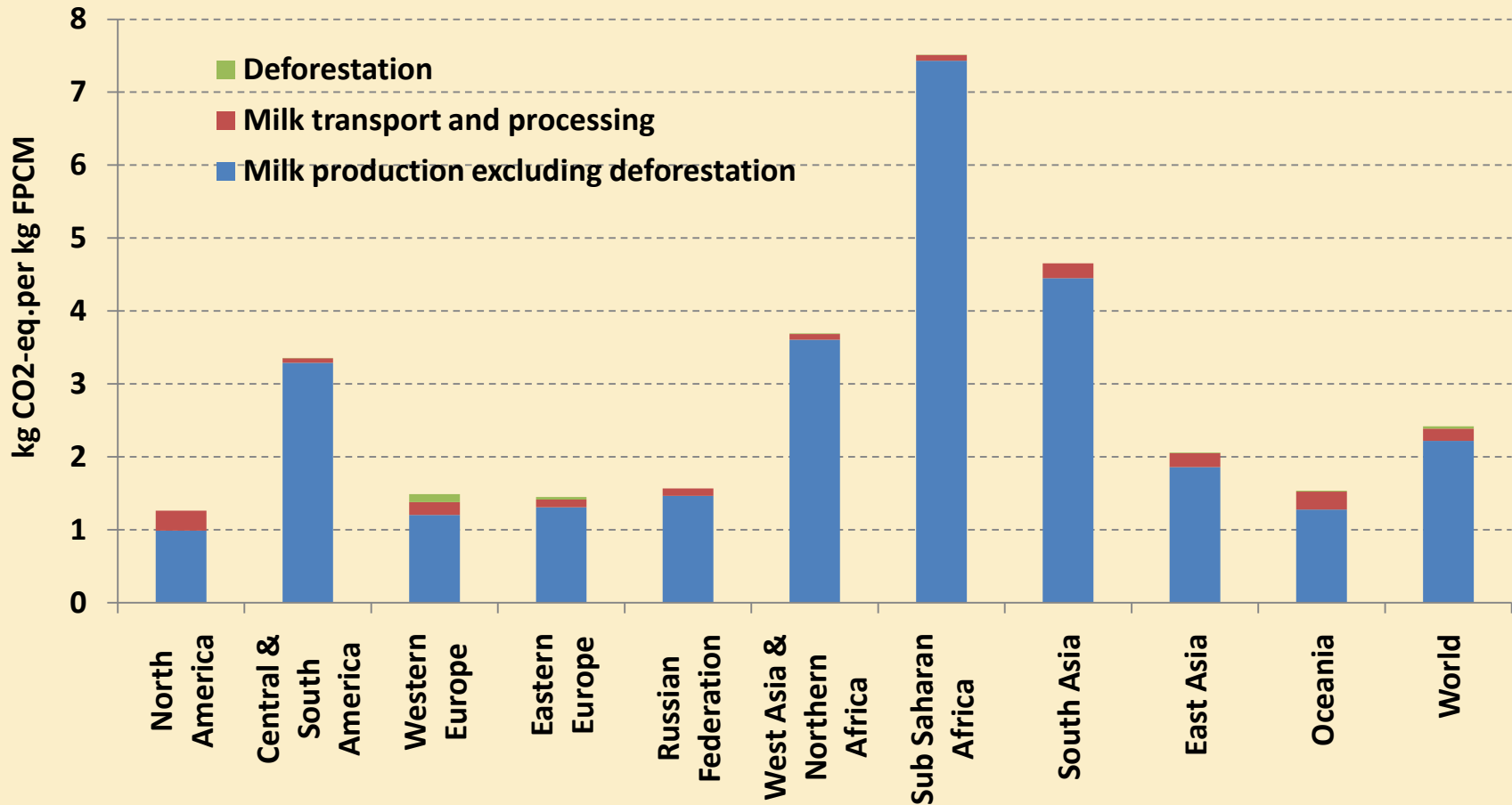
Milk: global overview



- ~2.7% of total anthropogenic emissions
- Emissions intensity: 2.4 kgCO₂e/kg milk
- Drivers of emissions:
 - ┆ Feed digestibility
 - ┆ Milk yield



Milk – emission intensity by region

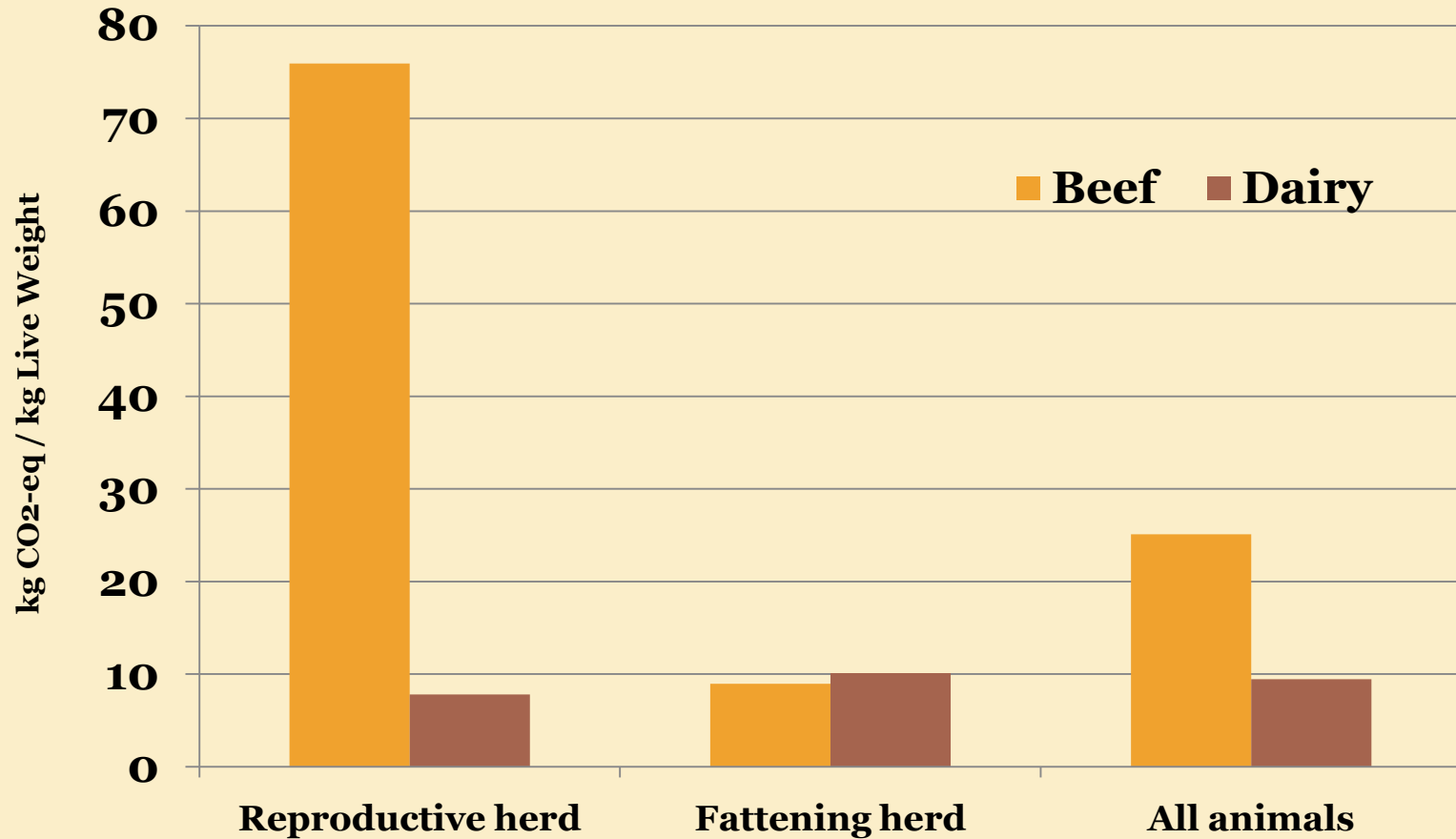


Meat production from beef and dairy herds and related GHG emissions – global averages



	Meat Million tonnes CW	GHG emissions Kg CO ₂ eq./kg CW	Total GHG Mt-CO ₂ -eq
Beef			
Fattening animals	26.8	16	428.8
Reproductive animals	8.2	149	1221.8
TOTAL Beef	35	63	1650.6
Dairy			
Fattening animals	24.3	20	486
Reproductive animals	9.7	16	155.2
TOTAL dairy	34	19	641.2

Average GHG emissions per animal type – a comparison between beef and dairy herd



Technical options for addressing GHG emissions



- **Improving efficiency:** reduce emissions per unit of animal product by cutting on “unproductive” emissions through breeding, improved animal health and management, balanced feeding, energy use efficiency
- **Reduce enteric methane:** enteric methane represents 2-12% of lost energy
 - Tap energy lost as methane in increased milk production and LW gain through improved conversion into product
- **Manure management**
 - reduce emissions during storage and waste application
 - recover energy from organic matter (anaerobic digestion)

Technical options for addressing GHG emissions (2)

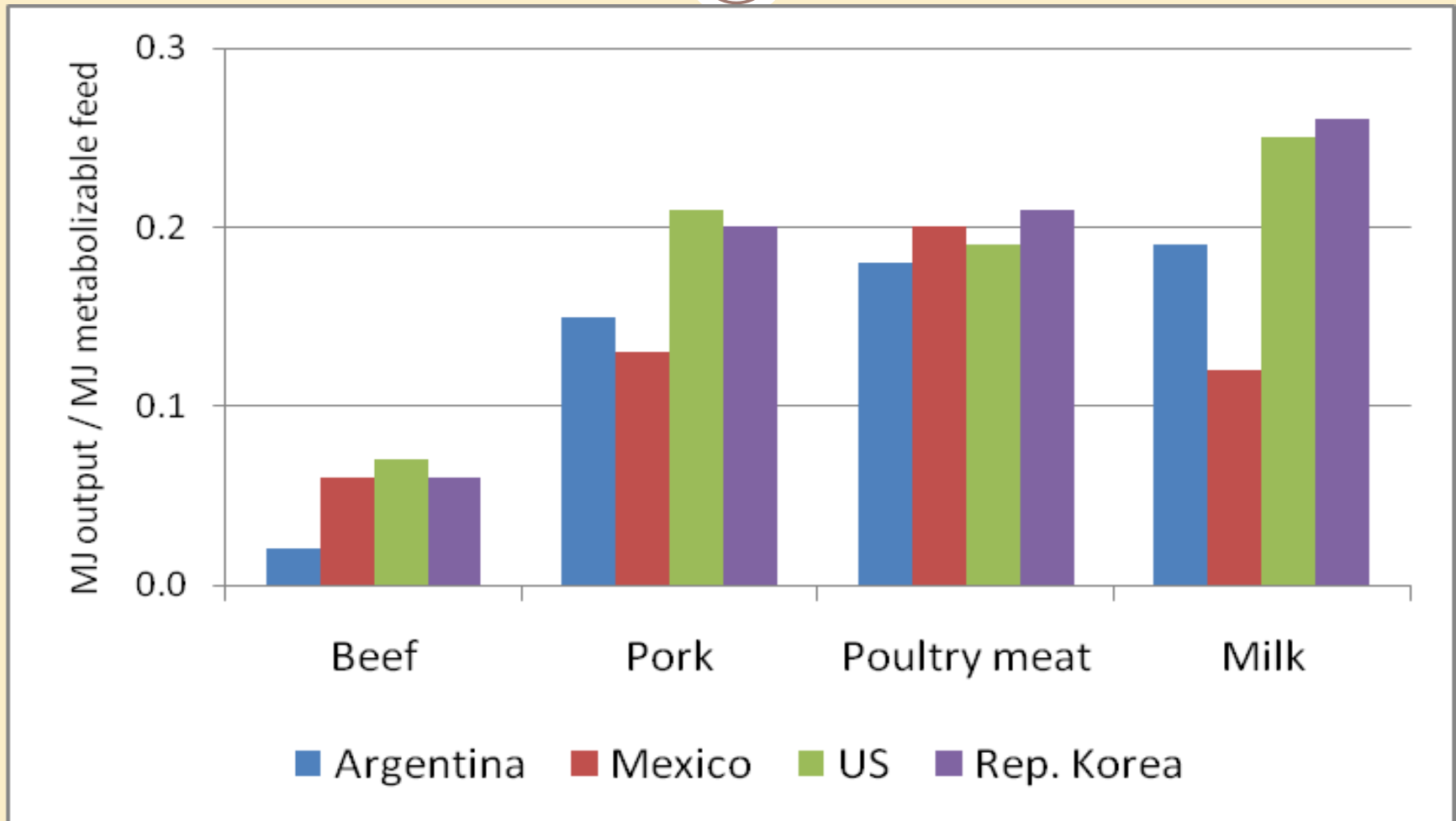


- **Precision agriculture** (irrigation, fertilizer and pesticide application)

- **Sustainable intensification to increase productivity**
 - Livestock production
 - Pasture intensification to increase productivity and to limit land conversion

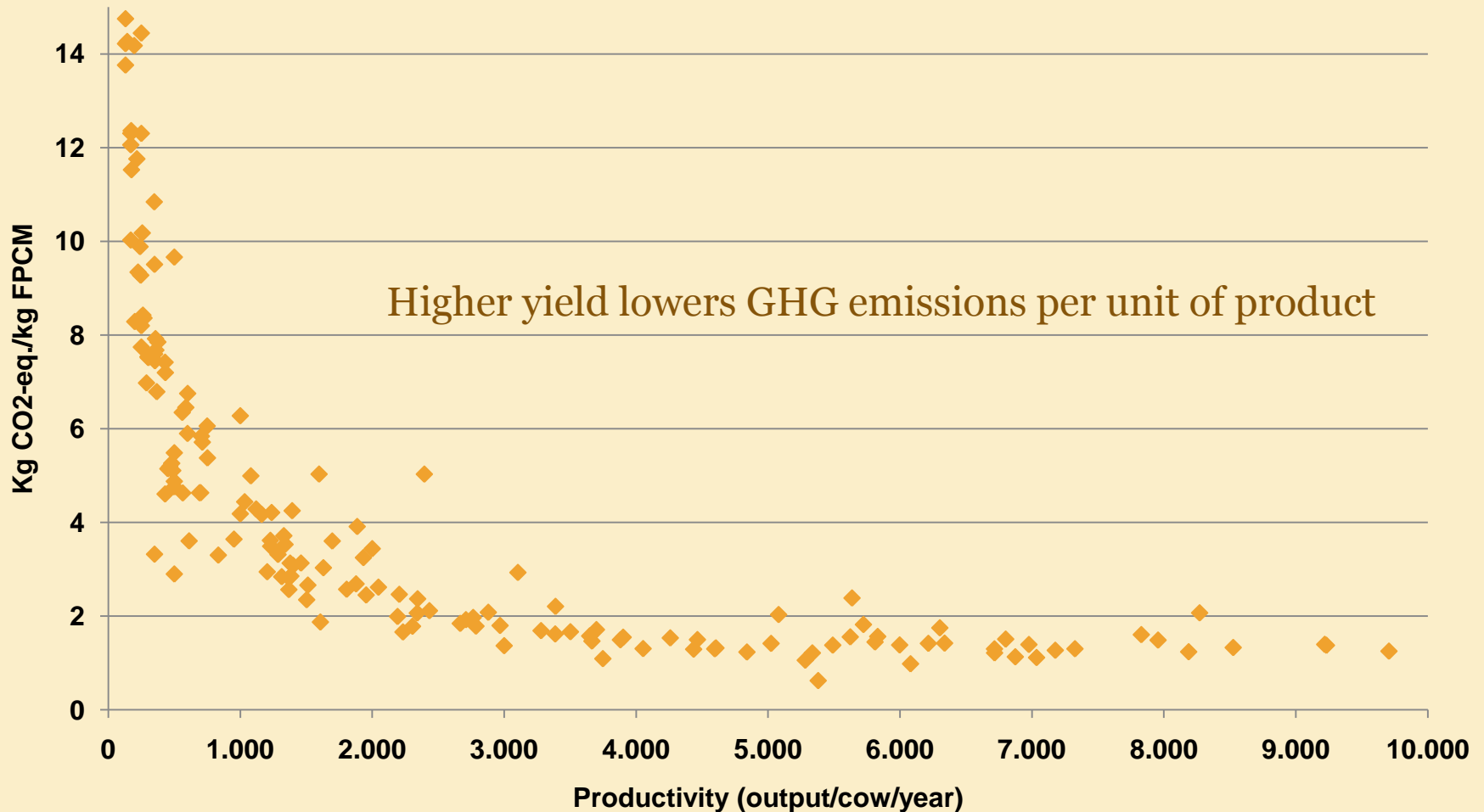
- **Increasing carbon stocks through C sequestration** (reduced tillage, pasture management, agro-forestry)

Feed conversion efficiency across species



Efficiency is key to reducing the sector's demand for resources

Relationship between emission intensity and productivity - Dairy



Increasing productivity is an efficient way of reducing emissions per unit of product

How do we move forward....



- Heightened awareness of sector's role in climate change
- Many ongoing initiatives: continue to move in parallel direction -> disjointed message; inability to compare results
- Need for continued dialogue and collaboration with different stakeholders (private sector, consumers, policymakers, industry) engaged in the food chain on:
 - | Data collection
 - | Methodological development and alignment
 - | Coordination of ongoing initiatives
- Communication and outreach – ensure the right message reaches stakeholders
- GHG only part of the sustainability question – Move beyond GHG emissions – many tradeoff involved hence holistic approach required

FAO's Activities towards addressing sustainability in livestock food chains

Partnership for benchmarking the environmental performance of livestock food chains

Building a Global Agenda of Action for Sustainable Livestock Sector Development



FAO HQ, ROME, 28-29 MARCH 2011

Agenda and list of participant

DEVELOPING A PARTNERSHIP ON BENCHMARKING AND MONITORING THE ENVIRONMENTAL PERFORMANCE OF LIVESTOCK FOOD CHAINS

CONSULTATION
Philippines Room (C277/281)

BUILDING A GLOBAL AGENDA OF ACTION IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT



1. Partnership for benchmarking the environmental performance of livestock food chains

□ Rationale:

- ┌ Many isolated, one-off analyses being undertaken.
- ┌ Working together can achieve improved cost-effectiveness, consistency and balance.

□ Details:

- ┌ *Aim* – improve the environmental performance of livestock food chains through benchmarking and monitoring.
- ┌ *Who* - industry, government, and NGOs.



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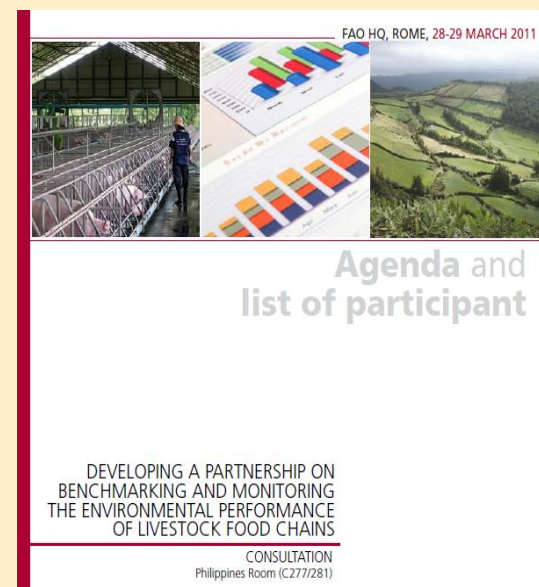
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1. Partnership for benchmarking the environmental performance of livestock food chains



- Key areas of common interest identified:
 - Improving assessment of GHGs by including C sequestration in grasslands;
 - Moving beyond GHG to other impacts, such as water consumption and depletion, nutrient use and biodiversity;
 - Assessing the C-footprint of feed components;
 - Developing improved methods for allocating emissions to co-products (hides, manure, rendering products);
 - Developing techniques for quantifying uncertainty in results.



1. Partnership for benchmarking the environmental performance of livestock food chains



Pro's

- ❑ Improved consistency (data, assumptions, methods)
- ❑ Non-partisan
- ❑ Common communication strategy – avoid misinterpretation and cherry-picking
- ❑ Improved cost-effectiveness through cross-sectoral pooling of resources on areas of common interest
- ❑ Improved shelf-life - FAO is committed to longer term collaboration and improving evidence base over time

2. Building a Global Agenda of Action for Sustainable Livestock Sector Development: Background



- | Initiated by “Dialogue Group” - **Brazil, Ethiopia, India, the Netherlands, the World Bank and FAO**
- | **June 2010** (Rome): to consult broadly on how to accommodate livestock production and sector growth in socio economic and environmentally sustainable manner
***Outcome:** recommended development of AOA which would seek to help shape sustainably the sector’s role in global food and nutrition.*
- | **November 2010** (the Hague)
***Outcome:** recommended that a global AOA should be built on broad based, voluntary, and informal stakeholder commitment towards improved sector performance targeting NR protection while including poverty reduction and public health*
FAO entrusted with preparatory phase of the AOA
- | **17-20 May 2011** (Brasilia): First multi-stakeholder platform meeting hosted by Government of Brazil
***Focus:** identification of objectives, priorities and conceptual framework of AOA*

2. Building a global agenda of action



□ Vision

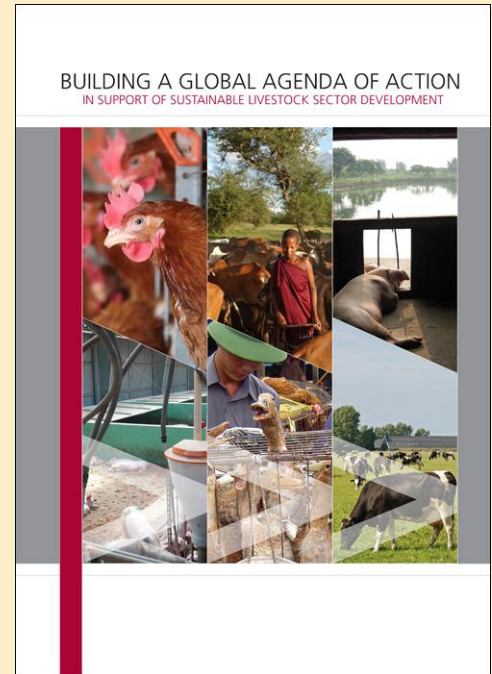
- ┌ Development of a responsible livestock sector which contributes to food and nutritional security in a context of rapidly growing demand and resource scarcity

□ Aim

- ┌ Increase resource-use efficiency of global livestock sector while safeguarding other environmental, socio-economic and public health consequences

□ Functions

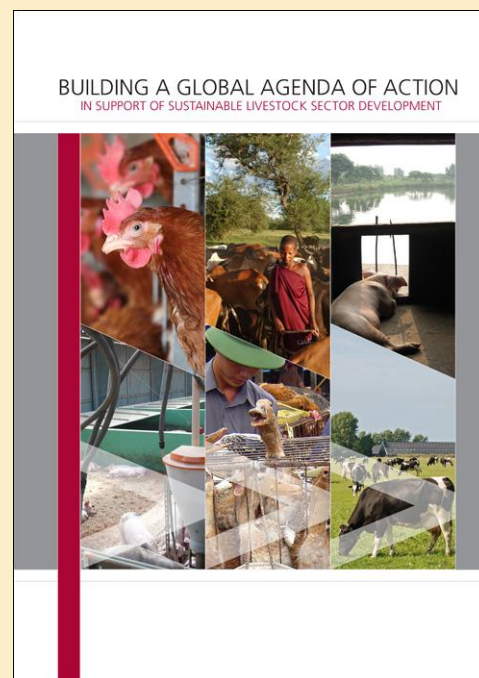
- ┌ To conduct strategic analysis and collation of information and knowledge
- ┌ To facilitate the sharing of knowledge and practices through dialogue, dissemination and capacity building
- ┌ Application and piloting of principles and new approaches



2. Building a global agenda of action

□ Form and structure

1. *Open multi-stakeholder platform*
(governments, private sector, civil society, academia, inter'l orgs.)
2. *Steering committee*: selected from multi-stakeholder platform
3. *Think tanks*: high level specialists to conduct independent analysis
4. *Global AOA secretariat*: oversee the daily management of global AOA activities



2. Building a global agenda of action

Preparatory phase: *next steps*

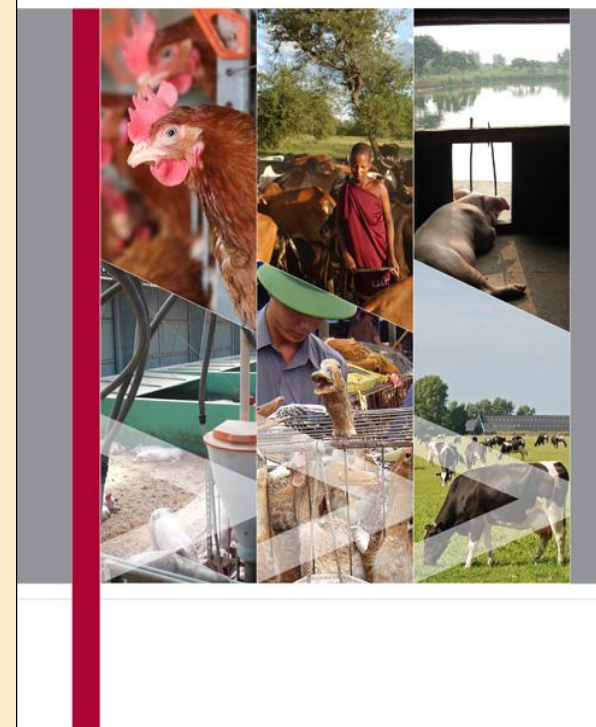
Stakeholder consultation

- Regional consultations
- Global consultation (2nd half 2011) all stakeholders
- Launch of Global Agenda for Action (1st half 2012)

Oversight of AOA activities

- Interim Preparatory Committee: Dialogue Group (Brazil, Ethiopia, India, the Netherlands, the World Bank and FAO), China, USA, Switzerland, IMS, WWF, IFIF, IDF, AU-IBAR, ILRI

BUILDING A GLOBAL AGENDA OF ACTION
IN SUPPORT OF SUSTAINABLE LIVESTOCK SECTOR DEVELOPMENT



Conclusions



- Livestock sector will continue to grow
- Sector growth has to be achieved through productivity gains
- Efficiency is key to reducing resource requirements and environmental impact and requires:
 - Technology adoption and development
 - Supporting policy frameworks
 - Broader stakeholder participation
- GHG are only part of the sustainability story ... need to incorporate other aspects and to balance other objectives such as nutrition, poverty reduction, economic growth



THANK YOU

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