# Introduction of the IPC proposed broad thematic areas

Pierre Gerber

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# Resource use efficiency

- Identified as core theme in *Brasilia Consensus*
- Resource use efficiency: amount of natural resource engaged and noxious emissions generated per unit of product (service)
- Applies to a range of contexts both, in terms of demand for animal products and status of natural resources

# Three proposed themes

1. Closing the efficiency gap in natural resource use
2. Restore value to grassland: supporting soil carbon, ecosystem health and productivity restoration with climate finance
3. Zero discharge: towards full recovery of nutrient and energy from animal manure

Proposed by the Interim Preparation Committee, for discussion.

Economic and Social elements to be addressed within the themes.

# Closing the efficiency gap in natural resource use

- **Issue**: growth in the context of resource constraint
  - historically, agricultural R&D has focused on improving efficiency with which conventional inputs (labor, capital, land) are transformed into marketable outputs, not natural resources (water, biodiversity, soil)
  - productivity gains can be but are not necessarily associated with efficiency gains
  - the efficiency gap measures the "distance" between any producer and top performers in similar agro-ecological conditions

# Closing the efficiency gap in natural resource use

- **Game Changer** : Increasing and volatile price of natural resources

- **Proposition**: Bridge the efficiency gap, rather than move the efficiency frontier

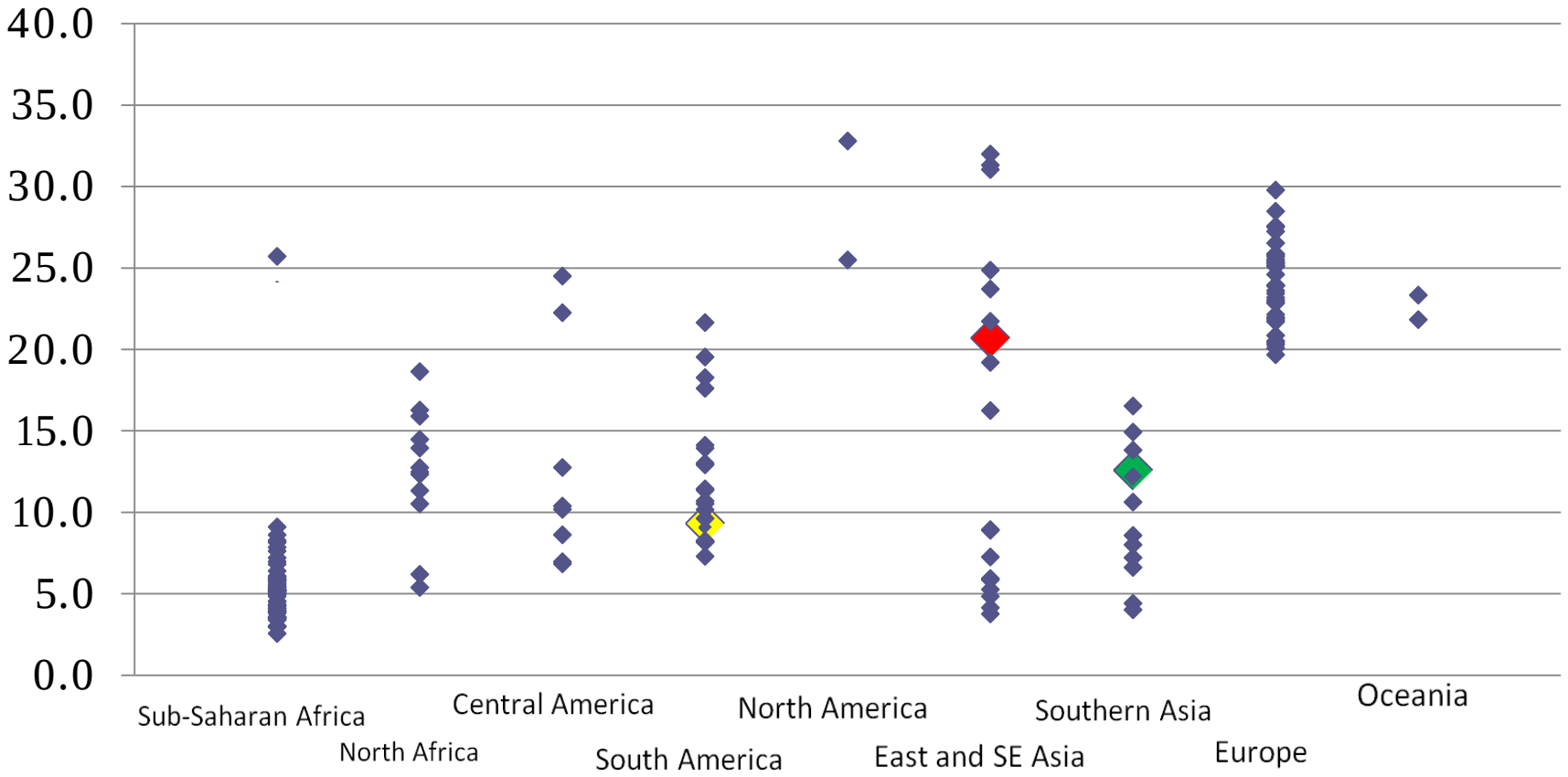
# Closing the efficiency gap in natural resource use

- **Target:** market oriented production, especially in emerging countries
- **Entry points:**
  - Develop metrics of resource use efficiency - *Partnership on benchmarking and monitoring the environmental performance of livestock supply chains*
  - foster innovation (access to capital and technology) and adoption of efficient practices and technology (extension) , especially for small holders
  - improve animal health
  - strengthen price signals (removal of subsidies to NR use)
  - foster business opportunities, and financial benefits

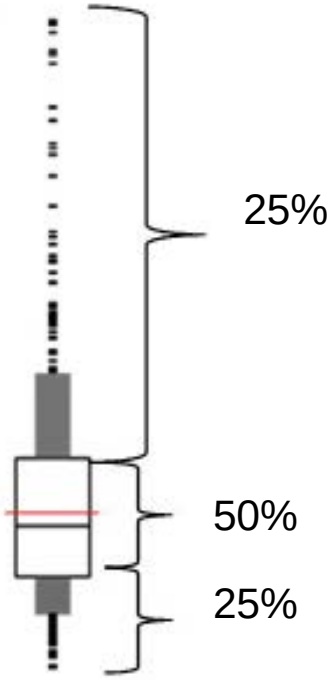
# Closing the efficiency gap in natural resource use

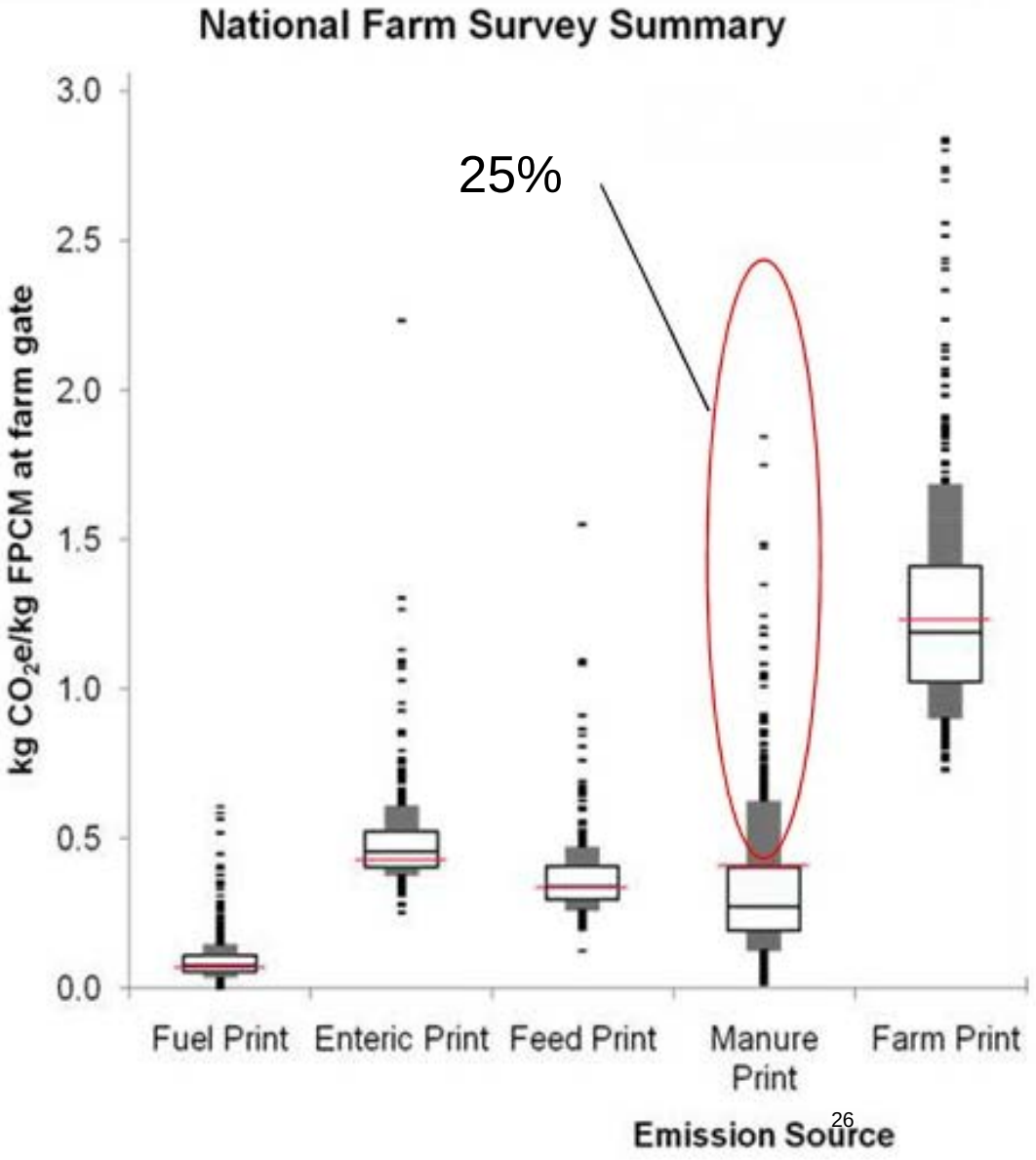
- **Questions and challenges :**
  - *How to ensure that the process doesn't increase the livestock sector dichotomy?*
  - *Bridge the efficiency gap or move the efficiency frontier ?*

# Average feed nitrogen use efficiency for lactating cows (Share of ingested N found in milk and meat)



# Variability means opportunities



# Restore value to grassland

- **Issue :** limited recognition of grassland and extensive systems value, despite their extent
  - improved range management can lead to an increase of soil carbon: average 0.81 to 0.13 $tCO_{2\text{-}e}\ ha^{-1}\ yr^{-1}$ for moist and dry grasslands, respectively (IPCC, 2006)
  - strong synergies between productivity gains, climate change mitigation and adaptation and other environmental services
  - issues with permanence and saturation of sequestration
  - lack of understanding and neglect of pastoral communities

# Restore value to grassland

- **Game Changers:**
  - pricing of environmental services ( PES, carbon markets)
  - climate change
  - demography

- **Proposition:** grassland soil carbon restoration through better management systems: yield synergies between productivity gains, climate change mitigation and adaptation and other environmental services

# Restore value to grassland

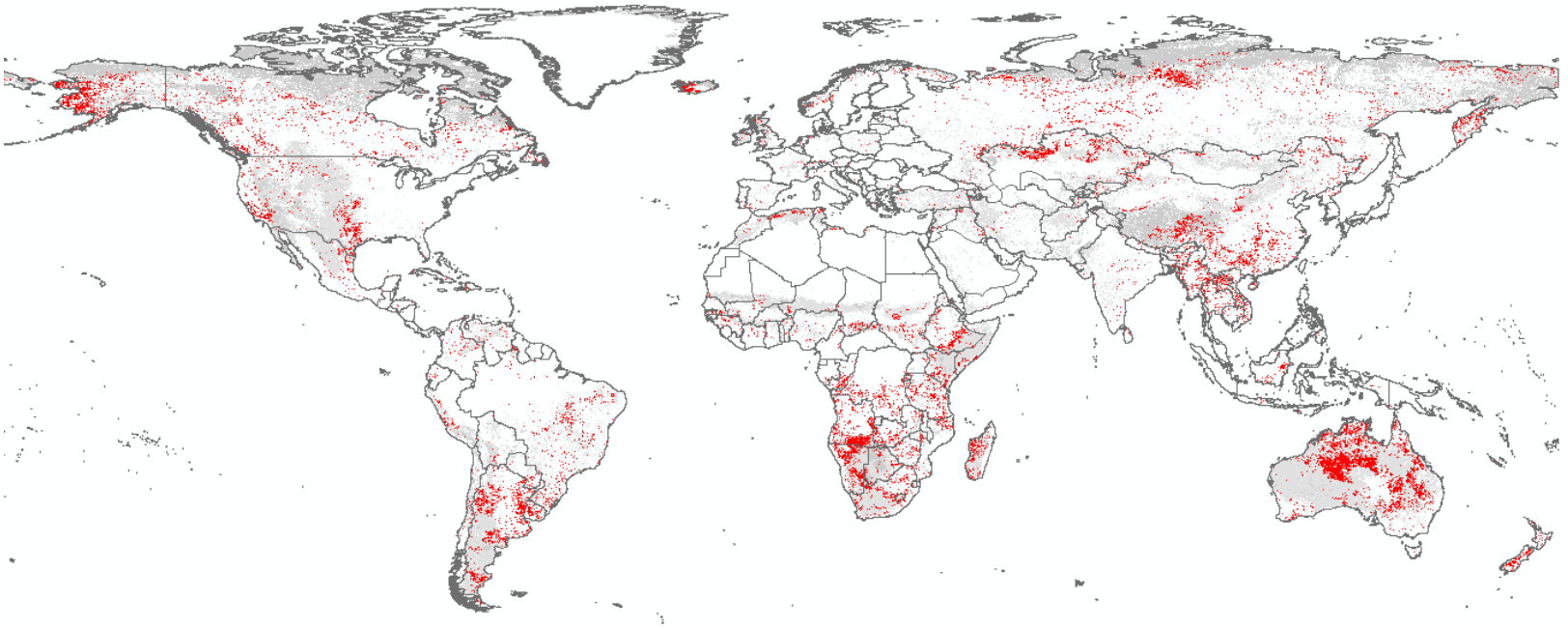
- **Target:** degraded grasslands receiving 300mm rainfall or more

- **Entry points:**
  - develop financial framework (e.g. REDD for pasture, dedicated c credit standard, or adaptation finance – Green Climate Fund),
  - develop methodologies for Monitoring Reporting Verification
  - develop climate change resilience strategies
  - identify institutional mechanisms for benefit sharing, stewardship and liability

# Restore value to grassland

- **Questions and challenges:**
  - *How to combine* mitigation, adaptation, and productivity gains? *Do we need an entry point for the business case?*
  - *What is the prospect for C markets* vs *adaptation finance in the near future?*
  - *How to ensure action has maximum effect on poverty alleviation and food security?*
  - *How to reflect the diversity of systems and yet have an unified goal? Do we have enough information on current trends and issues?*

# Degraded grasslands



*Satellite derived map using NDVI (Normalized Difference Vegetation Index) data from 1981 until 2003*
*Methods to obtain this map: NDVI is converted to NPP (net primary productivity) and corrected by Rain-Use Efficiency (correct the rainfall variability effect).*
*the trend in time (1981-2003) defines improvements (higher NDVI) or decline of the vegetation*

Data: Bai et al. , 2008. FAO / UNEP LADA project

# Towards zero discharge: recovery of nutrient and energy from animal manure

- **Issue:** Discharge of animal manure into the environment causes pollution of soils and water resources, as well as the emission of noxious gases
  - total amounts of nutrients in livestock excreta > synthetic fertilizers
  - 50 to 90 percent of the nutrients contained in feed are excreted in manure
  - manure management technologies and practices broadly developed but not adopted
  - nutrient and energy recovery: any activity that uses the nutrients or energy embedded in animal manure

# Towards zero discharge: recovery of nutrient and energy from animal manure

- **Game Changer:** Obligation to reduce direct discharge of manure into the environment
  - pressure from local communities and peers & regulation

- **Proposition:** move towards zero discharge and recovery of nutrient and energy from animal manure

# Towards zero discharge: recovery of nutrient and energy from animal manure

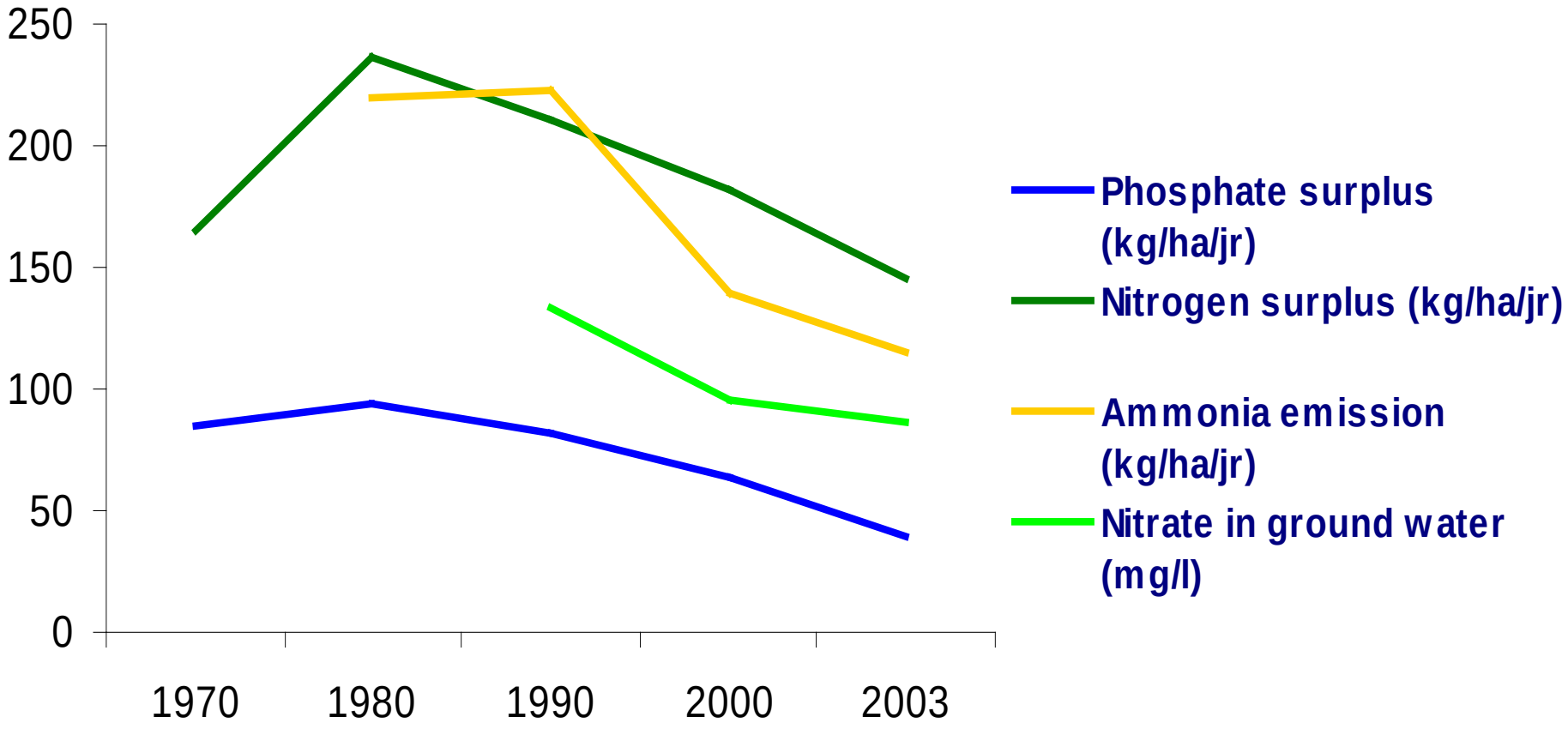
- **Target:** medium to large intensive production units

- **Entry points:**
  - ease the adoption of “end of the pipe” technical options (composting, anaerobic digestion): access to capital, extension
  - develop policies, e.g. spatial planning, required manure management plans, reduced fertilizers subsidies.

# Towards zero discharge: recovery of nutrient and energy from animal manure

- **Questions and challenges:**
  - *Is this proposition within reach? Does it require further targeting (species, regions) and related phasing ?*
  - *Is there general agreement on the relative low R&D priority in this area?*
  - *How to ensure that the process doesn't increase the livestock sector dichotomy?*

# Change in nutrient emission - the Netherlands




Backus, 2009

# Are these the right themes? Are they well formulated?

- Are they **relevant**?
- Do they **bring stakeholders together** on common objectives?
- Do they offer an appropriate thematic **focus for action** ?
- Does the GAA (multi-stakeholder process) have a **comparative advantage** in addressing them?
- Are there **other key themes** that should be considered?
- Are we satisfied with having **economic and social elements** addressed within “technical” themes?