

**5th Organic Producers' Conference 17-18th January 2011  
Celebrating 30 years  
of the Organic Research Centre, Elm Farm**

**The role of livestock in food production**

**The cow is no climate killer**

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# The particular greenhouse gases (GHG) from livestock farming amount of the total emissions

| GHG                    |     | Percent world | EU ag |
|------------------------|-----|---------------|-------|
| nitrous oxide          | N2O | 65            | 70    |
| ammonia                | NH4 | 64            | 95    |
| methane <sup>[1]</sup> | CH4 | 37            | 50    |
| carbon dioxide         | CO2 | 9             | 8     |

Figures: carbo europe and ipcc

<sup>[1]</sup> See on <http://icp.giss.nasa.gov/education/methane/intro/cycle.html>

# Greenhouse gases (GHG) in the atmosphere

**GHG**

**Years**

**nitrous oxide**

**110 - 120**

**methane<sup>[1]</sup>**

**9 - 15**

**carbon dioxide**

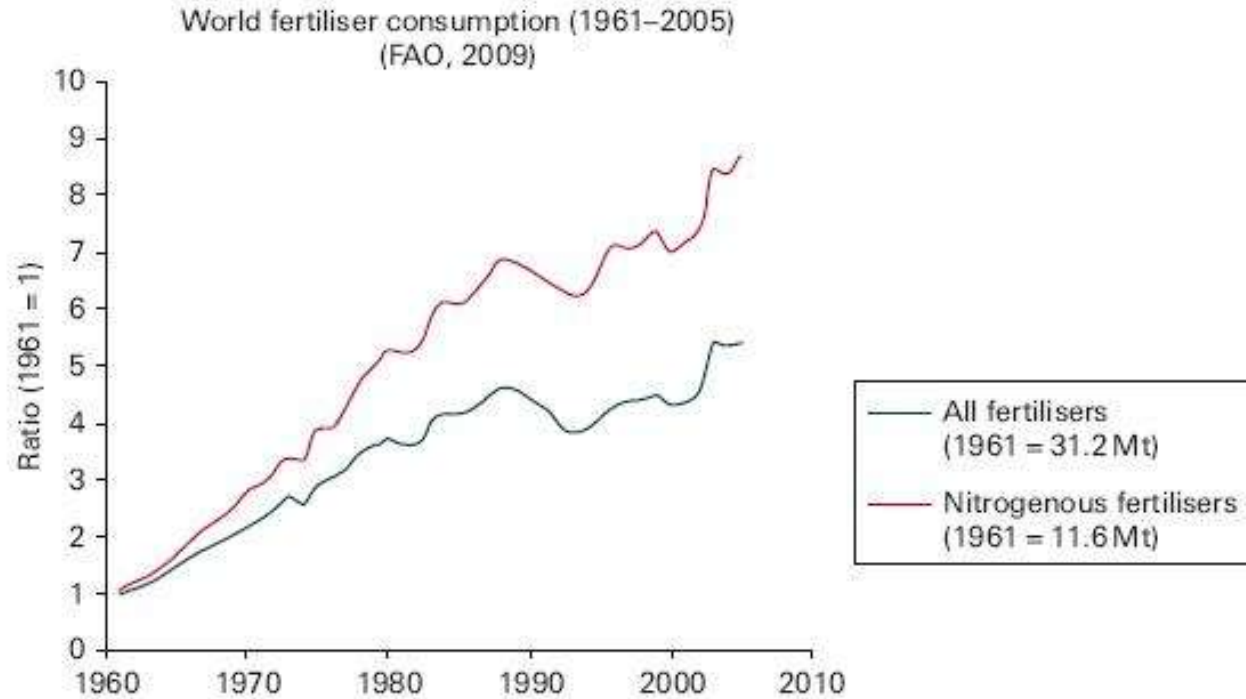
**110 - 120**

## *Increase of conc. GHG since 1750*<sup>[1]</sup>

| <b>GHG</b>                        | <b>climate-relevance</b> | <b>time in the atmosphere</b> | <b>Concentration<br/>Industr. time: 2005</b> | <b>Concentration<br/>pre industrial time: 1750</b> |
|-----------------------------------|--------------------------|-------------------------------|--|--|
| <b>CO<sub>2</sub></b>             | <b>1-time</b>            | <b>120 years</b>              | <b>380 ppm</b>                               | <b>280 ppm</b>                                     |
| <b>N<sub>2</sub>O</b>             | <b>296-times</b>         | <b>114 years</b>              | <b>319 ppb</b>                               | <b>270 ppb</b>                                     |
| <b>Methane<br/>CH<sub>4</sub></b> | <b>25-times</b>          | <b>9-15 years</b>             | <b>1.774 ppb</b>                             | <b>715 ppb</b>                                     |

<sup>[1]</sup> Concentration in parts per million (CO<sub>2</sub>) and parts per billion (N<sub>2</sub>O) and methane (CH<sub>4</sub>).  
IPCC (2007): pp 497-540. Bellarby, J.; Foereid, B.; Hastings, A. and P. Smith (2008).

# World fertiliser consumption (1961 – 2005)



**Amount of nitrogen fertiliser**

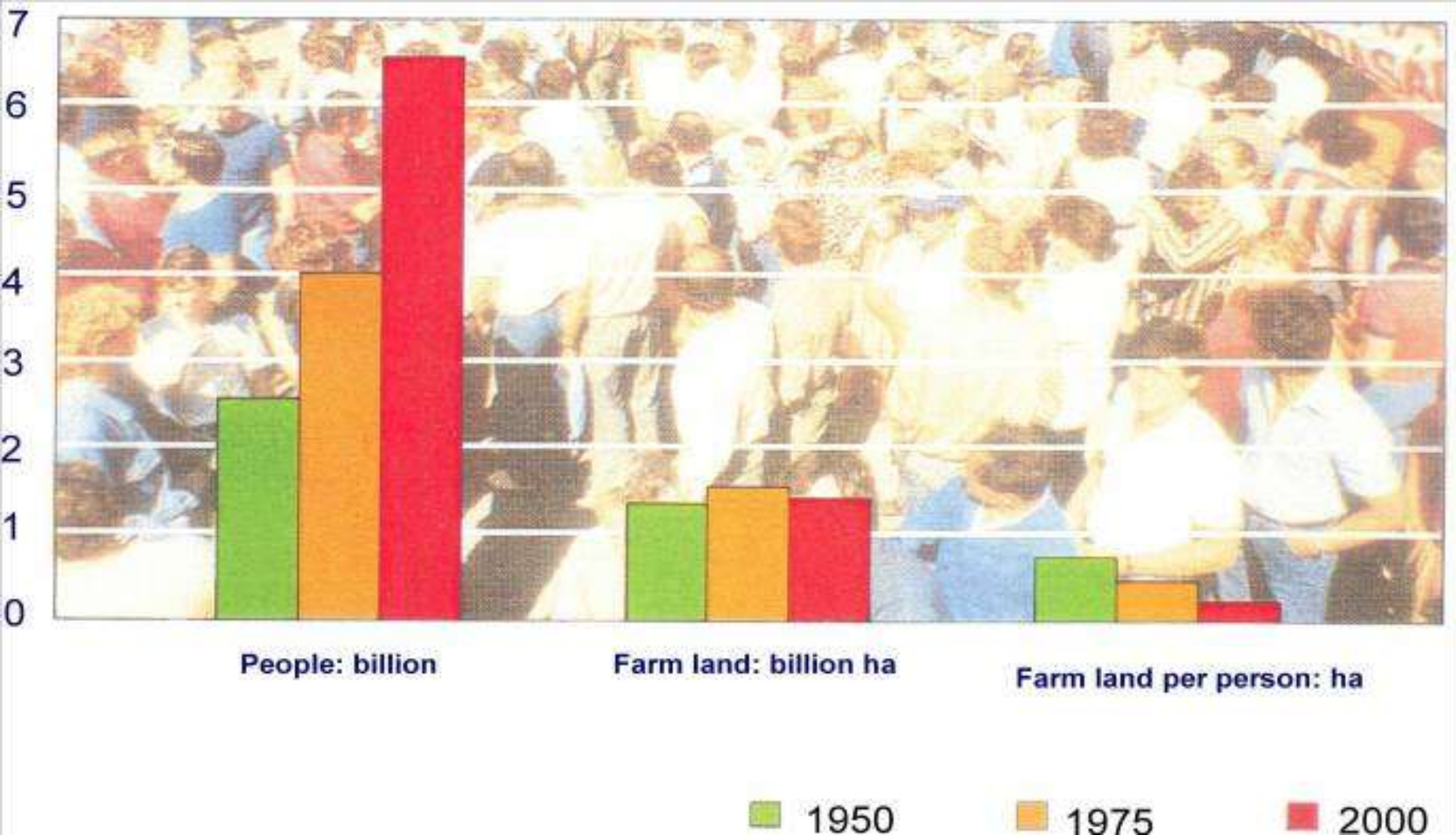
**about 2 to 3% >> N<sub>2</sub>O**

**Germany –  
compared to other european countries:**

**Highest emissions**

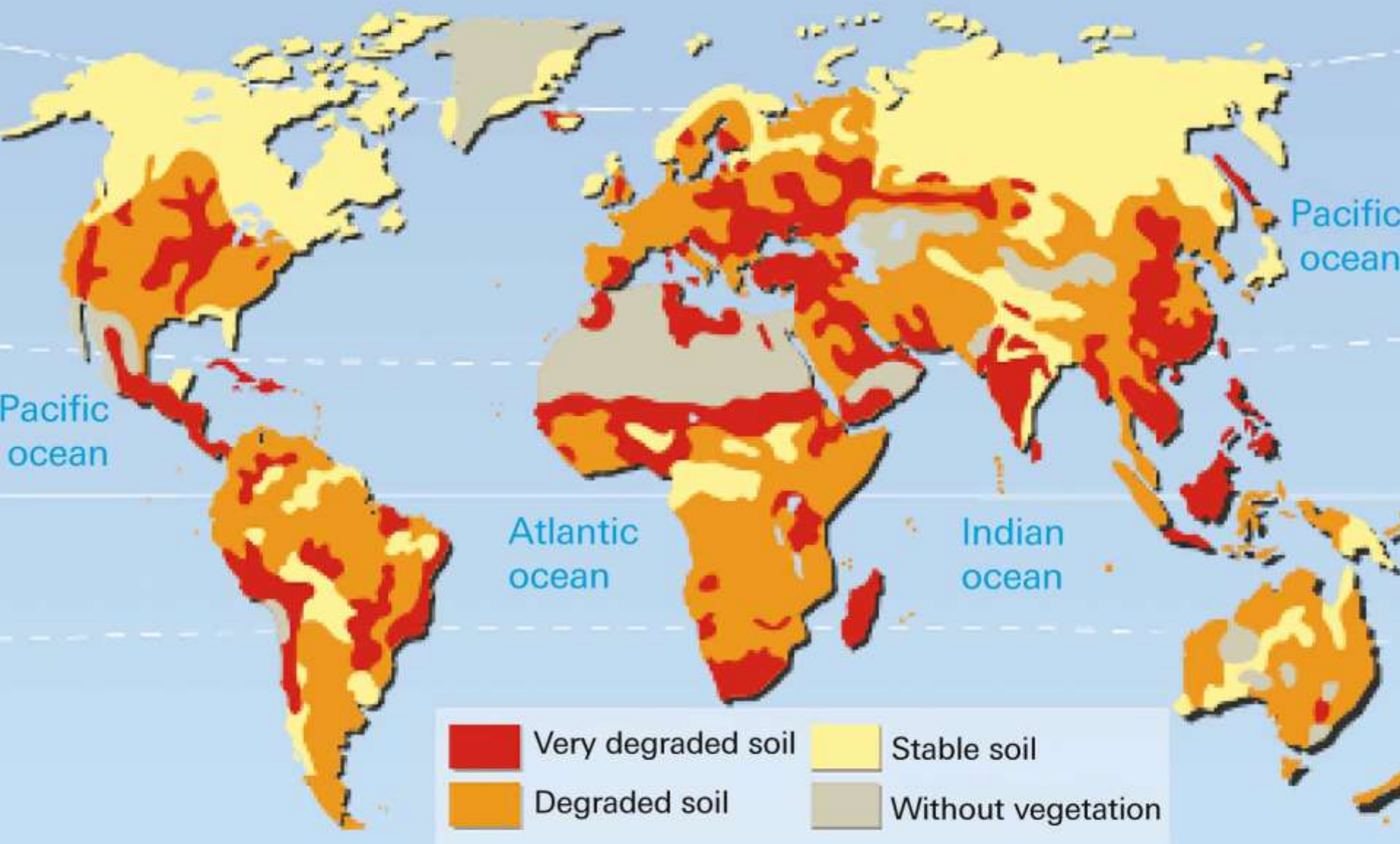
- N<sub>2</sub>O**
- CH<sub>4</sub>**
- NH<sub>3</sub>**
- and use of fertilisers**

# More people means less cultivated land per person for food, feed, (agro)-fuel and fiber production





# Soil degradation



Source: UNEP, International Soil Reference and Information Centre (ISRIC), World Atlas of desertification, 1997

Philippe Rekacewicz, UNEP/GRID-Arendal

# **Some proposed solutions make matters worse (1):**

## **Intensification of livestock\***

**\* Steinfeld, H. et al. (Eds.) (2006):**

**Livestock's long shadow**

**Steinfeld, H. et al. (Eds.) (2010):**

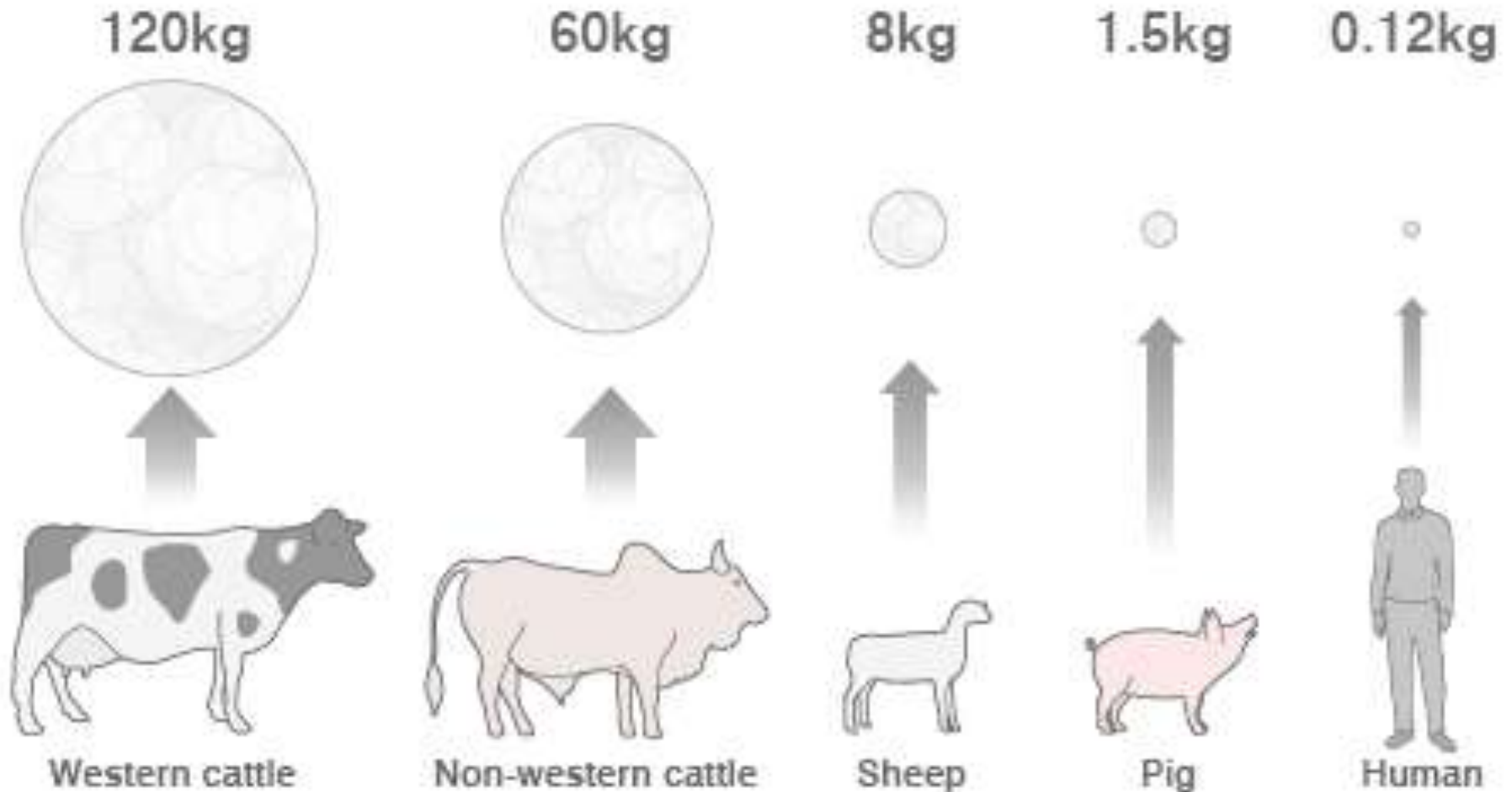
**Livestock in a Changing Landscape. Vol. 1+2**

# **Some proposed solutions make matters worse (2):**

- **Massively extend Confined Animal Feeding Operations (CAFOs)**
- **Production of grain animal feed already uses one third of global cropland.**
- **Aquaculture now shifting to grain feed**
  - **Grain feed competes directly with human food security**

# Perception

Methane emissions per animal/human per year



SOURCE: Nasa's Goddard Institute for Space Science

**To be part of the solution needs  
a completely different approach:**

**The crucial and sustainable value  
of grasslands and ruminants\***

**\* Idel, A. (2010): The cow is not a climate killer (in German)**

# The crucial and sustainable value of grasslands and ruminants:

40 percent of the global land = grassland

perennial grass is a major stock for carbon

>> land use change has to be avoided

perennial grass has – by its root building capacity – still the highest potential to stock carbon:

2 tonnes of humus in the soil

= less 3,67 tonnes of CO<sub>2</sub> in the atmosphere



**Thank you**



**Business as usual is not an option !**



# Climate Change - Projected Impacts

